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ABSTRACTS

I. ORGANIC FIBERS

TEXTILE FORECAST, 1947. Industry forecasts its first postwar year. Anon. *Chem. & Met. Eng. 52,* No. 8, 108-10 (August 1945). The probable value of goods to be manufactured in 1947 was estimated for each important industry in the United States by "men best qualified" for the Committee for Economic Development, headed by David C. Prince, General Electric Co. The following predictions are among those tabulated: *Textile and fiber industry,* $4,997,900,000, 27.2% over 1939; *cottonseed oil, cake, meal, and linters,* $168,600,000, 1.7% under 1939; and *rayon and allied products,* $575,500,000, 132.9% over 1939. These, and the figures tabulated and graphed for the other industries, are discussed.

TEXTILE INDUSTRY. The state of the textile nations. Notes on world markets and competition. Editors of *Textile Bulletin. Textile Bull. 69,* No. 1, 11-12, 14, 16 (September 1, 1945). A brief survey of the textile industry in England, France, Germany, Russia, Canada, Brazil, Mexico, Japan, and India contains such statistics as were available on the production of different sorts of textiles during the war years and the numbers of workers normally and presently employed. Similar information is given for the U. S., whose future export trade is threatened by Germany's accomplishments with artificial fibers, Japan's productive capacity, Brazil's growing industry, and Britain's governmental policy. The immediate prospects are good, however.

STANDARD REGAIN. Standard regain of textiles. P. Larose, National Research Laboratories, Ottawa. *Can. Textile J. 62,* No. 14, 42, 51 (July 13, 1945). "The use of dry weights in commercial transactions involving raw materials, tops, yarns, cloth, etc., is strongly recommended in the interests of accuracy and a better understanding between buyers and sellers," the more especially as the standard regains adopted throughout the world are not only not uniform, but are usually too high to have any significance.

SYNTHETIC FIBERS. This month's progress in rayon and synthetic fibers. Nylon and protein rayons. "Outlook." *Silk & Rayon 19,* 758-60 (July 1945). Digests are given of British patents on methods of making transparent films from polyamides (568 044, 563 078, 567 358) and from polyethylenes (471 590), hardening of "casein rayon" (567 904), spinning of "alginate rayon filaments" (568 177), and the dyeing of Vinyon with azo dyes (568 037).

I, 1. Vegetable

CALIFORNIA COTTON. Plans for California cotton mill suggest trend to West. Anon. *Textile World 95,* No. 8, 92-3 (August 1945). A cotton mill having an annual capacity of 11,000,000 yards denims, twills, seersuckers, poplins, gabardines, etc., was recommended by Lockwood Greene Engineers, Inc., to the San Joaquin Valley Association of Commercial Organization Secretaries. The mill will process only 5% of the California cotton crop, 80-90% of which formerly went to Japan. The neppiness of the acala cotton, which is 1-3/32 in. long, is controlled to produce A— and B+ yarns by using light opening and beating, and lower card production than normal. The equipment recommended for the mill is listed. It will take three years to build the plant.

COTTON BURS. Utilization of cotton burs to produce economically building materials, furfural, fertilizer and other by-products. C. G. Rook, Texas Technological College. *Chemurgic Paper* No. 368, 1945; 6 pp. Cotton burs from 450,000 to 500,000 bales of cotton can be made to yield 145,000,000 lb. fiberboard worth $4,350,000; 10,000,000 lb. plastic filler worth $200,000; 24,000,000 lb. furfural worth $2,160,000; 70,000,000 lb. glucosides worth $3,200,000; and 50,000,000 lb. fertilizer worth $500,000. The burs should be removed from the cotton fields, because they harbor the boll weevil. It is regrettable that they are burned for waste. The methods of making the above products are outlined.

COTTON WEATHER. Sunspots, rainfall, and the price of cotton. E. G. Misner, Cornell University. *N. Y. Agric. Exper. Sta. Bull. 476,* 27 pp. (1944). Abs. *Exper. Sta. Record 93,* 251 (September 1945). Correlation of sunspot number of the preceding year; rainfall in May, June, and July; and the December cotton futures over a 54-year period (1889-1942) showed that the sunspot prediction of a dry or wet season the succeeding year for May, June, and July in the Cotton Belt was correct 67% of the time; while the prediction from rainfall of a rise or decline in price of the December future at New York during August-December was correct 70% of the time. "Based on anticipated sunspot numbers and, from these, the expected rainfall, it thus appears that some dry years may now be expected in the Cotton Belt."

COTTON. Sales appeal of postwar cottons will be greater. Anon. *Textile Age 9,* No. 8, 96 (August 1945). Charles K. Everett, Cotton-Textile Institute, told the Cotton Research Congress in Dallas, Texas, that wartime discoveries have strengthened the sales appeal of cotton products. He cited *bonded fiber yarns;* new *rainwear fabrics* such as Shirley cloth; nine ounce *sateen; ducks* for drapes, slipcovers, and bedspreads; *drills* for curtains, towels, napkins, and runners; and *coated cottons* to replace rubber sheets, and for protective clothing, shoes,

luggage, costume accessories, furniture, electric equipment, and automobiles.

FLAX FIBER SIZES. A statistical study of the relations between flax fiber numbers and diameters and sizes of stems. Julian H. Miller, M. Gwendolyn Burton, and Troy Manning. *J. Agric. Research 70,* 269-81 (April 15, 1945); abs. *Textile Research J. 15,* 289 (August 1945). The relation of the numbers and diameters of flax fibers per stem to the size of the stem was studied on median sections of 420 stems of Georgia-grown flax. As the stem increases in diameter the number of fibers, the number of bundles, and the number of fibers per bundle increase. Diameters of fibers in the 10 largest stems are nearly twice those of the 10 smallest. Cirus flax and Triumph have the same fiber number per unit area of cross-section in stems of equal size, but the average diameter of Triumph is higher. Comparison with Dutch and Irish data shows 20% fewer fibers per stem section of equal diameter.

FLAX NOMENCLATURE. International standardization of flax names. C. R. Nodder. *Bull. Indian Central Jute Committee.* Abs., but reference not cited in full, in *Linens & Domestics 30,* No. 5A, 64 (August 31, 1945). So much confusion is arising from the use of the terms hemp and flax for fibers obtained from various, unrelated plants, that some international agreement on names is needed. The following commercial names are suggested: flax for *Linum usitatissimum,* jute for *Corchorus spp.,* hemp for *Cannabis sativa,* gambo for *Hibiscus cannabinus,* rosella for *H. Sabdariffa,* urena for *Urena lobata,* ramie for *Boehmeria spp.,* phormium for *Phormium tenax,* and sunn for *Crotalaria juncae.*

FLAX SUPPLIES. Flax supplies for the linen industry. Anon. *Dyer & Textile Printer 94,* 182 (August 31, 1945); *Jute & Canvas Review 17,* 10 (August 1945); *Textile Weekly 36,* 460 (September 7, 1945). The linen industry of Northern Ireland will be maintained at approximately the war-time level and imports of flax from Europe and Russia will be resumed as soon as possible. The switchover from Government contracts to normal production is taking place now. These facts were supplied by Sir Roland Nugent, Minister of Commerce for Northern Ireland.

FIBERS. Utilization of fiber of desert plants. C. W. Botkin. *Chemurgic Digest 4,* 226-9 (July 15, 1945). Abs. *Bull. Institute Paper Chem. (Library Notes) 15,* 452 (August 1945). "The author gives an additional account of information gained in the utilization of the fibers of nolina and flexible-leaved and rigid-leaved yuccas, particularly stressing the economic angle of harvesting and regrowth. Glauca yucca—one of the flexible-leaved species—has been made into a special paper for the Navy by a mill near the east coast. However, the most obvious uses of the fiber are for twine, rope, and burlap."

ROPE FIBERS. Malvaceous bast fiber studies. D. R. Ergle, B. B. Robinson, U. S. Department of Agriculture, and J. M. Demsey, Newport Industries, Inc. *J. Am. Soc. Agronomy 37,* 113-26 (February 1945). "Three malvaceous bast fiber plants, *Hibiscus cannabinus* L., *H. sabdariffa* var. *altissima,* and *Urena lobata* L., were grown experimentally near Altmore, Ala., and studied from the standpoint of possible utilization as sources of bast fiber in . . . a national emergency." They were found suitable, although the seed did not have time to mature. The yields were good. Fibers from water-retted plants were superior in strength and quality to fibers from dew-retted plants. Mechanical extraction of the fibers in a hemp-tow fiber mill was successful for the var. "*altissima*" and the *Urena lobata.* The breaking strength of fibers prepared by different methods from all three plants are tabulated, as are also the yields of fiber at various ages, and the yields per acre at various ages by different methods of processing.

TEXTILE INDUSTRY. Cotton industry in war-time. Anon. *Textile Weekly 36,* 442, 444 (September 7, 1945). Statistics released by the Cotton Control showing the state of the industry in Great Britain during the war are republished from *The Board of Trade Journal* for September 1. Employment in spinning and doubling, and in weaving; machine activity; and yarn and cloth production are shown for each year between 1937 and 1944, and by months from January through June 1945. Figures on rayon yarn and cloth are included. Export statistics are given for 1937-44 on p. 440. Employment decreased steadily from 187,000 in 1937 to a low of 92,500 in January 1945, and production went down from 70,000,000 linear yards a week in 1937 to 27,900,000 linear yards a week in May 1945. The shifts toward employment of more women and the manufacture of coarser yarns are noticeable.

TEXTILE STATISTICS. Anon. *Linen & Domestics 30,* No. 5A (August 31, 1945). Statistics on the following are given: U. S. production of cotton and part-cotton products in 1937, 1939, 1943, and 1944, listed by products, p. 64; World flax acreage and production 1940-43, listed by countries, p. 76; and figures on the costs of merchandizing linens and domestics in department stores of various sizes and in various parts of the country during 1942, 1943, and 1944, pp. 68, 70, 72; and monthly distribution of department store domestics sales by department for the seventh Federal Reserve District, p. 74.

I, 2. Animal

SERICULTURE. Textile items from abroad. Brazil. Anon. *Textile Age 9,* No. 8, 68 (August 1945). Production of silk cocoons in Sao Paulo, Brazil, increased from 721,500 kg. in 1941 to 3,688,420 in 1944, and the number of mulberry trees in the state increased from 15,000,000 in 1941 to 150,000,000 in 1943. During 1945 the Servico de Sericultura de Campinas plans to increase production by encouraging increased "mulberry tree cultivation, technical improvements, an intensive disinfection campaign, improvements in silkworm breed-

ing and the fiscalization of certain industrial organizations producing cocoons."

TARIFFS. A plea for simpler tariffs. Wholesale Woollen Merchants' proposals. Anon. *Textile Weekly 36,* 394, 396 (August 31, 1945); *Wool Record & Textile World 68,* 192-4 (August 2, 1945). The non-uniform import tariffs against woolens in different countries require British manufacturers to make an enormous number of cloths differing only slightly in weight, and force exporters to maintain large clerical staffs to make out the specialized invoices. The seriousness of existing conditions is shown in "Trade Barriers" published by the Wholesale Woollen Merchants, Ltd., London. This book tabulates for 45 countries the duties on various grades of cloth, other levies, and restrictions —the table on Argentina is given here as an example. A plea is made for simple and uniform tariffs, and the repeal of additional restrictions and taxes.

WOOL. Wool is the versatile fabric of the future. S. P. Kernahan. *Textile Age 9,* No. 8, 77-80 (August 1945). Now that wool can be make shrink-proof, mothproof, waterproof, non-itching, and as smooth to the touch as fine cambric or rayon it should find many new uses after the war. Blends of chlorinated (shrink-proof) wool with untreated wool can be dyed in two-tone colors from a single dye-bath. The chlorinated yarns stand out above the surface of finished blended-yarn fabrics to yield a whole variety of new finishes. If cheaper fabrics are demanded, wool-Ardil blends with the properties of wool will be available. Some information on the manufacture and properties of Ardil is included.

WOOL INDUSTRY. The woolen industry—America's new problems. Gustav Zellnik, Consulting Engineer. *Textile Age 9,* No. 8, 92. 94-5 (August 1945). The U. S. wool industry need not fear low tariffs if it installs modern equipment, pays wages high enough to attract good workers (English wages are no longer only a third of ours), and makes good materials. Low-priced fabrics made in Europe will not enter the local market for years, partly because of the destruction of mills and partly because of the huge demand for these fabrics in Europe. The United States is advised to make medium and high priced cloths for local consumption rather than try to export cheap woolens. Importation duty-free of fibers not raised in this country is advised.

WOOL STOCKS. U. K. wool stocks equal to two years' dominion production. Anon. *Textile Weekly 36,* 446, 448 (September 7, 1945). As of June 30, 1945 the United Kingdom owned 2,480,000,000 lb. of wool in the Dominions, 355,000,000 lb. in the United States, and 410,000,000 lb. Dominion-produced in the United Kingdom. Besides these stocks, there were 70,000,000 lb. U. K. wool, U. K.-owned in the United Kingdom. South American and United States stocks were 500,000,000 lb. and 200,000,000 lb., respectively. At a meeting of representatives of the governments of the United

Kingdom, Australia, New Zealand, and South Africa it was recommended that current clips be handled as during the war, but that a "Joint Organization" be formed to market old wool and support the marketing of current clips. The Dominions have accepted these proposals.

I, 3. Artificial

NYLON FIBERS. This month's progress in rayon and synthetic fibres. Nylon and polymer fibres. "Outlook." *Silk & Rayon 19,* 873-5, 890 (August 1945). A review of the new developments in nylon, casein rayon, and viscose rayon gives long digests of the following: (a) melting of the polymer chips prior to spinning the nylon fiber by allowing the chips to fall through a hot, inert liquid (Brit. P. 565 489); (b) manufacture of adipic, pimelic, and suberic acid by oxidation of alicylic alcohols by air in the presence of copper, cobalt, manganese, vanadium, barium, and cerium salts, or organic peroxides, or methylethyl or diethyl ketone (Brit. P. 565 636); (c) measurement of the fluidity of nylon, to measure the degradation of the fiber, in formic acid (*J. Soc. Dyers Colourists 61,* 40 (1945)); (d) study of the factors affecting the tensile strength of casein rayon (*Ind. Eng. Chem. 37,* 492 (1945)); and (e) application of acid wool dyes to viscose and cuprammonium rayons under special conditions (*J. Soc. Dyers Colourists 61,* 33 (1945)).

I, 3a. Cellulosic rayons

BRITISH ENKA, LTD. A. D. Carmichael, British Enka, Ltd. *Silk & Rayon 19,* 760 (July 1945). The working profit of British Enka, Ltd., in 1944 was £169,963 and the net profit £39,853. "Production was slightly increased during the year but cannot be expanded to the normal rate until more labour, of our prewar standard is available . . . War conditions have prevented us from making the advances in technique which normally could have been achieved."

CANADIAN CELANESE, LTD. Labour shortage hits Canadian Celanese. The expansion programme. Anon. *Silk & Rayon 19,* 782 (July 1945). The net profit of Canadian Celanese, Ltd., for 1944 came to $1,642,570. The plants operated at about 85% capacity because of the labor shortage. A sale of $5,000,000 3-½% debentures due September 1, 1959, is being held to raise funds for new equipment and buildings. Expenditures made for these purposes in 1944 amounted to $1,019,791.

RAYON PRODUCTION. Practical notes on rayon production operations. A. G. Arend. *Silk J. Rayon World 20,* 26, 28-9 (July 1944); abs. *Textile Research J. 15,* 290 (August 1945). "A review of some of the details of the preparation of viscose for spinning. Recent improvements in the testing of pulp for moisture content, in disintegration, crumb handling, and removal of air bubbles from the viscose solution are described."

RAYON SITUATION. Cotton and wool need

not fear rayon competition. A. J. C. Walters. *Silk & Rayon 19,* 770 (July 1945). In an address to the Association of American Textile Technologists, New York, about the British rayon industry, Walters said that "the demand for textiles of all kinds after the war . . . [will] be tremendous and . . . the cotton and woollen industries need harbour [no] undue fear about competition from rayon. New fields . . . are opening and new types of yarns and fabrics . . . [will] create new demands. There is . . . a vast field of opportunity for mixtures of rayon with cotton and wool which should benefit all fibres."

I, 3b. Protein fibers

BRISTLES. Artificial bristles from proteins. T. L. McMeekin, T. S. Reid, R. C. Warner, and R. W. Jackson, U. S. Department of Agriculture, Eastern Regional Research Laboratory. *Ind. Eng. Chem. 37,* 685-8 (July 1945). Coarse casein fibers are made by extruding a heated mixture of casein and water through a suitable die. When the fiber is stretched and hardened, under tension, with quinone, a bristle material is obtained, which is being tested in certain types of brushes. Data given here include the tensile strength before and after immersion for 4 and 24 hours in water, the strength of standard bristles stretched to twice their original length as a function of the thickness of the fiber, and the effect of temperature on the rate of quinone uptake.

FOWL-FEATHER FABRICS. Anon. *Textile Bull. 69,* No. 1, 18 (September 1, 1945). Wool-like fabric made chiefly from chicken feathers for use in clothing has been developed by United States Rubber Co. under the direction of B. H. Foster, according to an announcement of W. A. Gibbons, research director. The fine material is separated from the quills by a machine designed for this purpose, and the fine material (termed barbs) is mixed with other fibers and spun into yarn "by a special process." The weaving process is normal. Three-fourths of the feathers on a fowl can be used, and 80% of each feather is suitable for making yarn. Ten chickens of broiling size yield a pound of feathers. An average man's suit would require the feathers of 38 broilers. About one-hundred million pounds of chicken feathers and thirty million pounds of turkey feathers are wasted annually in the United States.

KERATIN FIBERS. Keratin proteins yield better synthetic fibers. Anon. *Textile World 95,* No. 8, 99, 180, 182 (August 1945). The Regional Research Laboratories of the U. S. Department of Agriculture, working on the production of fibers from proteins, found that strong fibers could be made from keratins. Unlike the proteins from soft tissue, they are difficult to dissolve. A spinning solution is made by taking up a mixture of keratin and a reducing agent in a solution of a detergent, such as a sodium alkyl-aryl sulfonate. The spun fiber is treated with acetone alone or in salt solution, and is stretched to 300-400% of its original length. Its wet strength is low.

PROTEIN FIBERS. Fibers from feathers and eggs. Anon. *Chemurgic Digest 4,* 208-9 (June 30, 1945). "Reference is made to the research carried out in the Western Regional Research Laboratory for converting proteins from waste into fibrous materials."

GLOBULIN SOLUTIONS. Viscous solutions of vegetable globulins. Robin Hamilton Kendall Thomson (to Imperial Chemical Industries, Ltd.). USP 2 381 088, August 7, 1945. Surface gelation of dilute aqueous solutions of vegetable globulin is prevented or delayed by maintaining ammonia in the atmosphere over the surface of the solution. Enough ammonia is used to make its partial pressure "substantially in excess of that occasioned by the incipient hydrolysis of the protein by the alkali metal hydroxide in the solution."

THREAD MANUFACTURE. Thread and filament manufacture. Robert Louis Wormell (to Courtaulds, Ltd.). Can. P. 429 409, August 14, 1945. Threads made from casein or other protein are made resistant to attack by boiling water or hot dilute acid by treating them with an aqueous solution of formaldehyde, from 350 to 750 grams of sulfuric acid per liter of solution, and, according to one claim, considerably less sodium sulfate than is required to react with all the sulfuric acid present to form sodium disulfate. The treated threads are washed free of acid and dried.

I, 4. Synthetic

"FIBER A." Du Pont's "Fiber A." Anon. *Textile Bull. 69,* No. 1, 21-2 (September 1, 1945) "Fiber A" is a new high polymer synthetic yarn being made on a pilot-plant scale at the Waynesboro, Va., plant of E. I. du Pont de Nemours & Co. It absorbs less than 3% moisture; has a dry strength of 4-5 denier, excellent electric properties, a specific gravity of 1.17, a fusing temperature of 190-220°C., and a soft hand and dimensional stability. The fiber is thermoplastic, resistant to microörganisms and body acids. Raw materials are cheap. Fabrics made from the fiber are resistant to creasing, chemicals, and light. "It is expected that the yarn will find many applications in the electrical field."

I, 4a. Nylon type

NYLON USES. Post-war uses for nylon in many industrial spheres. Possibilities as textile fibre, sheet, tube and moulded forms. A. G. Arend. *Silk & Rayon 19,* 768, 770 (July 1945). Nylon can be used in sheets, bristles, tubing and fittings, window screens, bearings (lubricated by water), tapes for sound tracks, laminates for making boxes, ropes, coating for wire, tire cord, sewing and surgical thread, and parachutes. The properties that make nylon useful in these products, the applications of the products, and nylon's chief competitors for each use are considered.

POLYAMIDE SOLUTION. Lower alcohol polyamide solution. Orion Edwin Schupp, Jr. (to

Canadian Industries, Ltd.). Can. P. 429 551, August 21, 1945. A synthetic linear polycarbonamide, the amide groups in whose chains are separated by at least two carbon atoms, is dissolved in an alcohol containing less than six carbon atoms that already has dissolved in it at least 5% of a halide, nitrate, or thiocyanate of a metal of groups I and II of the periodic system having an atomic number less than 31. Specifically, polyhexamethylene adipamide is dissolved to form a solution containing 5 to 25% of the polyamide in methanol containing 10 to 30% calcium chloride. The resulting solution is stable at 25°C.

I, 5. Applications as fibers

I, 5a. Insulation

COATING WIRE. Sliver formation. Ralph Coger Newman and John William Roming (to Corning Glass Works, to Owens-Corning Fiberglas Corp., to Fiberglas Canada, Ltd.). Can. P. 429 493, August 14, 1945. Insulated conductors are fabricated by building up a felted annular mass of fibrous insulating material about a rotating body, continuously withdrawing an annulus of fibers from one end of the mass, passing a conductor through the center of the annulus, simultaneously withdrawing the annulus and conductor at the same linear speed in a direction parallel to the axis of rotation of the rotating body, and establishing relative rotation between the conductor and the body so that the annulus is spun down as a seamless twisted coating on the conductor.

I, 5b. Plastic filler

PULP-RESIN COMBINATIONS. Pulp-synthetic resin combination products. I. Pulp-resin preforms. II. Paper-base laminates and saturated papers. R. H. Mosher. *Paper Mill News 68,* No. 16, 17-18 (April 21, 1945), No. 27, 16, 18, 20, 22 (July 7, 1945). Abs. *Bull. Institute Paper Chem. (Library Notes) 15,* 464-5 (August 1945). In a digest of these articles, it is stated that the longer fibered pulps (such as softwood sulfite and sulfate, and the rag types) give the strongest preformed pulp-resins.

III. NONFIBROUS MATERIALS

CELANESE PLANT. Chemicals from natural gas at Texas plant of Celanese. Anon. *Chem. & Met. Eng. 52,* No. 8, 97 (August 1945). The first large-scale production of acetic acid, acetic anhydride, acetone, methyl alcohol, and formaldehyde by a process using natural gas as the raw material has started at the Bishop, Texas, plant of the Celanese Corp. of America. Hexamine will be made later, and a butadiene plant was three-fourths finished at the time the article was written. There are three illustrations of the plant.

III, 1. Plastics, resins, rubber

FLEXIBLE RESINS. Flexibility in resins. Anon. *Textile Bull. 69,* No. 1, 18, 21 (September 1, 1945). Paraplex P-10 is a permanently flexible thermosetting resin with all the advantages of the low-pressure type. It is made by the Resinous Products & Chemical Co., Philadelphia, for use in laminates, for impregnating ordinary fabrics and glass cloth, and for a casting or potting compound. In finished form it does not deform over a wide range of temperature; contains no extractible plasticizer; is tough, flexible, slightly elastic, and resistant to water and ultra-violet light. It is applied in the form of a liquid which penetrates thick fabrics easily, but it has to be kept out of contact with air until polymerization is complete.

PLASTICS. Developments in plastics for textile applications. Anon. *Am. Wool Cotton Reptr. 59,* No. 35, 11-12 (August 30, 1945). Plastic sheet materials can compete with textiles in many fields because of the simplicity of their manufacture and the attractiveness of the product. Even the high cost of chemicals entering into their manufacture should be no drawback, because the low cost of labor and machinery for their production offsets it.

PLASTICIZED RESINS. Plasticized compositions. Robert H. Barth and Harry Burrell (to Heyden Chemical Corp.). USP 2 381 247, August 7, 1945. Film-forming resins, cellulose esters, and cellulose ethers are plasticized with 1 to 10 parts of a mixture of pentaerythritol diacetate dipropionate and dipentaerythritol triacetate tripropionate. The exact conditions for the preparation of a number of esters of pentaerythritol are given in the specification. Molding properties and compatibilities with film-forming substances are listed.

GAS TANK. Hidden barrier. Reid B. Gray (to Glenn L. Martin Co., Inc.). USP 2 381 739, August 7, 1945. A gasoline tank with flexible walls is made from several layers of rubber-like synthetic plastics bonded to form a wall, and an intermediate membrane of sheet nylon, through which the gasoline diffuses less readily.

III, 1a. Cellulose derivatives

CELLULOSE PLASTICS. L. T. Barnette. *Chemurgic Digest 4,* 185, 187-8 (June 15, 1945). Abs. *Bull. Institute Paper Chem. (Library Notes) 15,* 447 (August 1945). "The author discusses in a popular manner a number of cellulose derivatives, their properties, and possible applications, including their use as coating materials."

CELLULOSE USES. Seven uses of cellulose products in converting. F. K. Shankweiler. *Am. Paper Converter 19,* No. 6, 22-3 (June 1945). "The raw material for cellulose products is cotton linters. The author discusses applications of cellulose products in the paper industry under the headings: laquers, emulsions, adhesives, pre-film, thermoplastics and laminants, hot melts, and water-soluble derivatives, such as methylcellulose and carboxymethylcellulose. Questions asked after the

presentation of the paper and their answers are appended."

OXIDATION. Oxidants that promote the dialdehyde cleavage of glycols, starch, and cellulose. L. J. Heidt, Edward K. Gladding, and C. B. Purves, Massachusetts Institute of Technology. *Paper Trade J. 121,* TAPPI 81-9 (August 30, 1945). Cellulose and other substances containing 1,2-glycol groups can be split by periodate and lead tetraacetate. A review of the literature—50 references are cited here—on the dialdehyde cleavage brought about by these reagents led to the formulation of a mechanism for the reaction. From the mechanism it was possible to state the requirements of a reagent to bring about this split (diameter of the oxidizing atom, the magnitude and nature of its valence, and its oxidation potential). And from a knowledge of these requirements it was possible to predict that certain trivalent silver salts and sodium perbismuthate should serve as oxidants in this reaction, while other common oxidants will not.

CELLULOSE ESTER. Plasticized cellulose ester. Irving E. Muskat and Franklin Strain (to Pittsburgh Plate Glass Co.). USP 2 381 511, August 7, 1945. Claim is made to a cellulose ester plasticized with an ester formed by the reaction of one molecular equivalent of a polyglycol with two molecular equivalents of an acid half-ester of a saturated monohydric alcohol and carbonic acid. Up to 30 parts by weight of plasticizer may be present. Examples given in the specification show the use of diethylene glycol bis (methyl carbonate) and diethylene glycol bis (amyl carbonate) for plasticizing methyl methacrylate, diethylene glycol bis (ethyl carbonate) for plasticizing polymerized vinyl acetate, diethylene glycol bis (butyl cellosolve carbonate) for plasticizing cellulose acetate, diethylene glycol bis (n-propyl carbonate) for plasticizing ethyl cellulose, and diethylene glycol bis (n-amyl carbonate) for plasticizing polystyrene. Pigments are compatible with resins so plasticized.

ETHYL CELLULOSE. Production of ethyl cellulose. Henry Dreyfus. USP 2 381 972, August 14, 1945. A process for making cellulose ethers comprises etherifying cellulosic materials with diethyl sulfate in the presence of sodium hydroxide and at least 40% of tetraethyl ethylene diamine, calculated on the weight of the cellulosic materials.

CELLULOSE ETHER DERIVATIVE. Aubrey E. Broderick (to Carbide and Carbon Chemicals, Ltd.). Can. P. 429 570, August 21, 1945. A cellulose-ether derivative, which is insoluble in water, acetone, and lower monohydric aliphatic alcohols after it is dried, is made by the reaction of a water-soluble ether derivative of a higher polyose and a water-soluble alkyl alpha-ketoaldehyde or glyoxal.

CELLULOSE DERIVATIVES. Salt and fatty acid ether manufacture. Albert Aubrey Houghton and Kenneth Luckhurst (to Canadian Industries, Ltd.). Can. P. 429 669, August 28, 1945. A water-insoluble cellulose glycollic acid is isolated from a solution of its fibrous, water-soluble, alkali metal salt in solution in "an etherification reaction mixture" by adding gradually to the solution enough sulfuric, or other strongly ionized mineral acid more than 14 *N* to retain the fibrous condition of the glycollic acid throughout the addition of the mineral acid and after extraction of the glycollic acid with water.

III, 1c. Condensation polymer resins

POLYVINYL ACETAL. Plasticized polyvinyl alcohol. La Verne E. Cheyney (to Wingfoot Corp.). USP 2 380 925, August 7, 1945. Claim is made to a polyvinyl acetal composition plasticized with an amide formed by the reaction of equal molar proportions of a polyalkylene polyamide and a monocarboxylic fatty acid containing about five to about thirty carbon atoms.

PLASTIC. Plastic composition. La Verne E. Cheyney (to Wingfoot Corp.). USP 2 380 926, August 7, 1945. A plastic composition consists of a polyvinyl acetal plasticized with oleyl alcohol or phytol.

POLYAMIDE. Heat oxygen treated polyamide Calvin Souther Fuller (to Bell Telephone Laboratories, Inc., to Western Electric Co., Inc.). Can. P. 429 473, August 14, 1945. A tough, rubber-like, infusible, non-crystalline polyamide, having good aging properties, is prepared by heating in the presence of gaseous oxygen to a temperature between 125 and 450°C., a thin layer of non-crystalline, saturated linear polyamide. The polyamide is "of the type produced by condensation of bifunctional amide-forming reactants." It has an intrinsic viscosity of at least 0.1. The heating process is sufficient to produce the above mentioned properties in the polyamide, but insufficient to decompose it to a harmful extent.

COATING COMPOSITION. Coating and impregnating composition. Willard Edwin Catlin (to Canadian Industries, Ltd.). Can. P. 429 547, August 21, 1945. A coating composition is prepared by adding with vigorous stirring a solution of a synthetic linear polymeric amide to a large volume of a non-solvent and redispersing the precipitated polymeric amide obtained in a non-solvent for the amide by vigorous mechanical dispersing means to separate the agglomerates of amide particles. The final particles are not larger than 4 microns. The polymeric amide is a reaction product of a mixture of a diamine and a dibasic carboxylic acid, or the polymer of a monoaminomonocarboxylic acid.

COATING COMPOSITION. Finely divided polyamide preparation. Orion Edwin Schupp, Jr. (to

Canadian Industries, Ltd.). Can. P. 429 552, Aug. 21, 1945. A synthetic linear polyamide is precipitated in situ in finely divided form on a textile fabric by applying to the fabric a solution of the polyamide in a solution of an inorganic salt in an alcohol containing less than six carbon atoms, and diluting the final solution with a non-solvent for the polyamide at least until precipitation of the polyamide occurs. The inorganic salt is a halide, nitrate, or thiocyanate of a metal having an atomic number under 31 and belonging to groups I and II of the periodic table. The alcohol contains more than 5% of the salt. The polyamide is one that on hydrolysis with hydrochloric acid yields either hydrochlorides of monoaminomonocarboxylic acids, or mixtures of a dibasic carboxylic acid with a diamine hydrochloride. The process is claimed specifically for treating regenerated cellulose.

III, 1d. Rubbers and rubber derivatives

UPHOLSTERY. Rugged upholstery. Anon. *Chem. & Met. Eng. 52,* No. 8, 140 (August 1945). Waterproof, flameproof plastic upholstery, known as Naugahyde, will be made by the U. S. Rubber Co. in a wide range of bright, decorative colors, two-tone effects, and a variety of grains. It is not affected by perspiration, salt water, alcohol, gasoline, most acids and alkalis, and can be cleaned with soap and water. It is pliable and easy to tailor; will not get hard or crack; and resists edge-wear, abrasion, flexing, and wrinkling. Over a million yards have been used by the Army and Navy. It will be offered for furniture, trucks, theater seats, railroads, automobiles, boats, and restaurants.

III, 3. Surface-active compounds, textile assistants

PLASTICIZERS. Esters of aleuritic acid. William Joseph Sartori. USP 2 382 919, August 14, 1945. Cellulose derivatives for use as lacquers or fibers are plasticized by lower alkyl aleuritates. Methods of preparing the aleuritates from aleuritic acid derived from shellac are given in the specification.

IV. FIBER TO YARN

DRAFTING WAVE. The investigation of periodicities in the products of cotton spinning. The drafting wave. G. A. R. Foster, British Cotton Industry Research Association. *Shirley Institute Memoirs 19,* 169-82 (June 1945). Evidence is presented for the view that the drafting wave in drafted card sliver is the result of the dragging forward of the short (floating) fibers by the longer fibers gripped by the fast rollers. It follows that the amplitude of the wave obtained on the ordinary cotton-roller system depends on the draft, the roller setting, the properties of the cotton, and the condition in which the cotton is presented to the rollers, but not on the frame on which the drafting is performed. Experiments confirming these statements are cited also. Photographs of slivers showing drafting waves, and graphs showing their amplitudes are included.

DRAFTING WAVE. The form and length of the drafting wave in cotton rovings. G. A. R. Foster and J. G. Martindale, British Cotton Industry Research Association. *Shirley Institute Memoirs 19,* 210-21 (June 1945). The correlation periodgraph was used to analyze drafting waves of slivers or rovings in which the fibers were made parallel by previous drafting. For this study, 0.3-hand slubbings of various twist-factors of Tanguis, Punjab-American, and Uppers cotton with different drafts and front-to-middle roller settings were investigated. The results are expressed in graphs and equations. With normally twisted roving, the variation of wave length, λ, with draft, D, and roller setting, h, are given by a formula of the type: $\lambda = aD(h-b) + ch + d$. On the three cottons studied, the coefficient b is slightly less than the mean fiber length. "The wave length varies in a rather complicated manner with the twist in the ingoing roving; consequently it has not yet been possible to relate the other coefficients (a, c, d) to the fibre characters."

FIBER ARRANGEMENTS. Some calculations relating to the arrangement of fibers in slivers and rovings. G. A. R. Foster, J. Gregory, and J. R. Womersley, British Cotton Industry Research Association. *Shirley Institute Memoirs 19,* 197-209 (June 1945). Mathematical. Calculations relating to the arrangement of fibers in slivers and rovings, and to the effect of the arrangement on the thickness of the roving and on the composition and weight of tufts drawn or cut from it "are collected together in this paper with a few practical examples of their application." The equations are used to investigate the effect of drafting on a latent periodic fiber arrangement.

TESTING TENSIONING DEVICES. Method and apparatus for evaluating thread tensioning devices. Ferdinand A. Decker, Jr., and Paul G. Woodward (American Viscose Corp.). USP 2 380 951, August 7, 1945. "A device for evaluating tension devices" comprises "a supporting bracket, a post in the bracket, a member extending transversely of and being pivotally mounted on the post, an arm extending from the post, a pulley pivotally mounted on the arm, and a flexible strand fastened to one end of the member and extending over the pulley for supporting a counterweight."

CLEARER. Clearer for roving or spinning frames. William J. Dunleavy (to Whitin Machine Works, Inc.). USP 2 382 214, August 14, 1945. A clearer said to combine effectively the good features of both fixed and movable clearers for removing lint or fly from drawing rolls or aprons comprises: a clearer roll having angularly-spaced, depressed wiping portions and intervening raised

portions; intermittently-operated means to advance the clearer roll angularly to engage the raised portions of the roll with the drawing rolls for further angular advance of the clearer roll "thereby"; "and said latter means comprising spaced pins on said clearer roll and a driving lug on one of the drawing rolls which engages successive pins in said clearer roll on successive revolutions of said drawing roll, said pins being disposed in two oppositely inclined sets and said driving lug being axially positioned to engage one set only of said pins in the clearer roll in a given end-for-end position of said roll". Brushes alongside the set of pins to engage and clean the drawing rolls at each side of the driving lug are claimed also.

DUST CONTROL. Means for controlling dust in the screening of dust-laden material. Walter J. Parks (to W. S. Tyler Co., Inc.). USP 2 382 252, August 14, 1945. A screening mechanism has a base; a screen mounted on the base for reciprocation; an enclosure for the screen comprising a casing surrounding it and mounted on the base independently of the screen mounting; and an outlet on the casing through which suction may be applied. The casing structure comprises a skeleton frame made up of end uprights projecting from the base and longitudinal members connecting the upper and lower ends of the uprights together; end walls having discharge openings in them; and a cover and a bottom wall to complete the structure. The space between the uprights and the longitudinal connecting members at the sides of the casing structure constitute elongated openings.

SPINNING FLAX. Spinning machine for flax. Arthur Job, (to Sils Corp.). Can. P. 429 707. August 28, 1945. Yarn is made from decorticated flax straw by the operations of carding, doubling, combing, drawing several times, roving, and winding the roving into cheeses; boiling the cheeses in caustic soda solution partially to remove internal gum between the fibrils and external gum between the fibers; drawing the wet, grouped fibers with an intense force applied through a relatively short distance to make the partly degummed cells glide on one another; and spinning the drawn fibers into partly degummed yarn.

ERIEZ NON-ELECTRIC PERMANENT MAGNETIC SEPARATORS. Bulletin of Eriez Manufacturing Co., Erie, Pa., June 1945; 6 pp.; gratis.

HIGHER DRAFTS FOR CARDROOM & SPINNING MACHINERY. Bulletin of Casablancas High Draft Co., Ltd., Manchester, England, n. d.; 24 pp.; gratis. The advantages of high drafting equipment for cardrooms and for spinning are discussed, and Casablancas equipment is described with the help of photographs and diagrams. The information is said to be based on two lectures by J. Noguera.

IV, 1. Preparation for spinning

CARDING. Carding questions answered by Georgia mill men. Anon. *Textile World 95,* No. 8, 109, 111, 113 (August 1945). Representatives of 26 mills answered 11 questions on carding practice in the last "meeting-by-mail" of the Textile Operating Executives of Georgia. Information on the types of opening, cleaning, and picker beater machines and their production is tabulated. Considerable difference of opinion existed on the merits of vacuum, hand, and continuous stripping; the effects of longer card production on the breaking strength of yarn; on the use of a draft of about 100 on cards; on the suitability of endless belts for driving lickerins and comb boxes; on the optimum number of steps for drawing, roving, and spinning; and on the best way to creel a long-draft frame. The men were almost unanimous, however, in disliking ball bearings on lickerins and comb boxes, and bottle oilers for cylinder, doffer, and lickerin shafts; and in thinking that high-compression rollers on cards and drawing increase the amount of sliver in the can.

WOOL MILLS. Relocating for continuous processing in woolen yarn mills. Gustav Zellnik, Consulting Engineer. *Textile World 95,* No. 8, 119, 184, 186 (August 1945). A layout is suggested for the opening and scouring room of a woolen mill which employs pneumatic pipe lines and aprons for conveying the wool from one operation to the other. Four workers and a foreman can handle the operation of an entire unit for breaking the bales, opening, dusting, picking burrs, scouring, carbonizing, neutralizing, drying, and bailing the wool.

FIBER CUTTER. Staple fiber cutter. Dan B. Wicker and Charles W. Cox (to American Viscose Corp.). USP 2 381 240, August 7, 1945. A staple-fiber cutter comprises at least one cutting member; a shear member, part of which serves as a cutting base, in cooperation with the cutting member; means for periodically juxtaposing the cutting member with the cutting-base portion of the shear member; and means for imposing an additional oscillatory motion on one of the members at least during the periods of juxtaposition. The oscillatory motion has a component transverse to the direction of, and out-of-phase with, the cutting motion. Further, it is of such limited amplitude that it in itself causes relative shifting between the cutting member and the cutting base portion of the shear member without entirely removing the cutting member from any portion of the cutting-base portion.

HANDLING FILAMENTS. Method and apparatus for handling filamentary material. Alexander Bruenner (to American Viscose Corp.). USP 2 381 643, August 7, 1945. Claim is made to the method and apparatus for withdrawing filamentary material from several spinnerets and to a

method of lacing the filamentary material from the withdrawing device to a processing device, *e. g.,* a staple-fiber cutter. The withdrawing apparatus comprises a pair of godets rotating about inclined axes to cause lateral displacement of successive wraps of the filamentary material, means for driving the godets, and suction means for continuously removing the excess material as it is discharged from the wrappings. In the lacing method, continuous multiple-filament units are led through a generally helical path made up of several elongated loops or wraps to form an aggregate, the filamentary material discharged from the path is led through the space surrounded by the loops, one of the loops is drawn out to a point adjacent to the receiving portion of the handling device, and the latter loop is cut at this point to provide a leading end.

DRAFTING MECHANISM. Drafting mechanism for textile fibers. Joseph Noguera (to Casablancas High Draft Co., Ltd.). USP 2 381 983, August 14, 1945. A drafting mechanism for textile fibers comprises front-draw rolls, endless belts for engaging and guiding the fibers and feeding them to the front-draw rolls, front-guiding members for the endless belts arranged with their longitudinal axes at right angles to the line of contact of the front-draw rolls, and driving rolls for the endless belts arranged with their longitudinal axes parallel to the line of contact of the front-draw rolls. This design allows the flattened strand of fibers to pass from between the endless belts and be delivered to the front-drawing rollers in a plane at right angles to the line of contact of the rollers, so that the more loosely held fibers at the edge of the strand are squeezed towards the middle; and allows the surfaces of the belts gripped between the belt-driving rollers to be in a plane at right angles to the plane in which the strand passes from between the belts.

DETACHING MOTION. Sigurd H. Helland (to Whitin Machine Works, Inc.). USP 2 382 481, August 14, 1945. A comber has combined with the drive shaft and a detaching-roll shaft a detaching motion for advancing the roll shaft with an alternating motion. The detaching motion comprises gearing between and connecting the shafts, including two star-wheel members of two Geneva couples. The star-wheel members are mounted in positions facing each other. Means are mounted on the drive shaft to work in the space between the star-wheels to engage and drive them alternately. This gearing is said to be compact enough to be housed under the sliver table or in the driving-head enclosure.

DABBING BRUSH. Alvin P. Cadeau (to S. A. Felton & Son, Co., Inc.) USP 2 382 541, August 14, 1945. A dabbing brush for a combing machine arranged in sections "to permit relative displacement of the two parts to distribute the wear" comprises a head; a circular brush section

on it; a removable, centrally-secured, auxiliary brush section on the head, close to the circular section, and having its periphery provided with a number of segmental recesses by which it (the auxiliary section) may be adjusted to bring one or another segmental recess close to the circular section, to prevent the auxiliary section from turning during use.

STAND HOOK. John M. Blackmon and Joseph F. LeGere. USP 2 382 852, August 14, 1945. A stand hook for stripping cotton from steel-calender rolls comprises a handle; a shank extending axially from one end of the handle; and a brass member extending downward from the outer end of the shank and at a right angle to it, which is threaded into the outer end of the shank and is provided on its outer face with a vertical cutting edge in the plane of the vertical longitudinal center of the shank.

DABBING BRUSH. Frank H. Hardy. Can. P. 429 218, August 7, 1945. A dabbing brush for wool combs has in combination: a brush back; a bristle-clad brush-toe section bolted to the back, extending the full width of one end of the brush and about half the length of the face of the brush; an abutment on the brush back, spaced from the brush section; a number of identical brush sections, which taken together form the heel of the brush face, extending from the first brush section to the abutment; and a spline on the brush back between the first brush section and the abutment, extending transversely across the brush back in dovetailed engagement with the identical brush sections to hold them to the brush back and to permit them transverse sliding movement, only, with respect to the brush back. As the toe portion of the brush wears, the brush face is kept even by replacement of the original heel sections with blocks of shorter bristles.

IV, 2. Spinning, doubling, twisting, winding

FLAX STUBBLE. Flax stubble turned to use. Anon. *Chem. Eng. News 23,* 1474 (August 25, 1945). "Buenos Aires industrialists have succeeded in manufacturing cloth from thread made from flax stubble ordinarily left in the field. The thread is said to have a high degree of resistance, and the textile produced from it an excellent appearance. Bundles of the raw material are first combed to separate the usable fibers, then chemically treated and given high-temperature baths, followed by cold baths, in order to disintegrate the fiber. It is then passed to centrifugal machines, steam dried, and mixed with wool, after which it is ready for the spinning mill. Technologists are still working to obtain a fiber strong enough to be used without combination."

BOBBIN LIFTING APPARATUS. Clarence M. Asbill, Jr. (to Monarch Mills, Inc.). USP 2 381 482, August 7, 1945. A device for aiding dof-

fing by releasing the frictional grips of yarn packages on a spinning machine comprises two members extending the length of the row of spindles, and lifters to engage the individual packages on the spindles, and means to move one member. The first member is mounted on the machine for rotation, the second is mounted on the first and rotates with respect to it, and the lifters are mounted on the second member. When the first member is moved about its axis the lifters engage and release the yarn packages.

STOP MOTION. Stop motion for textile machines. Herman T. Overbey (one-third each to J. F. Martin and H. P. Taylor). USP 2 381 683, August 7, 1945. A stop motion for a twisting or spinning machine, part of which reciprocates continuously, includes an actuating arm, pneumatic means for controlling the stop motion (including a valve in the path of the arm's movement), and operative means with a step-to-step motion for connecting the mechanism to the reciprocating part of the machine.

STOP MOTION. Stop motion for textile machines. Herman T. Overbey. USP 2 381 684, August 7, 1945. Twisting and spinning machines have in combination a vertically reciprocating ring rail, power-driven means for operating the ring rail, a device to throw the operating means out of operation, and an automatic stop motion for the operating means. The stop motion includes: a pneumatically operated actuator, a valve controlling the operation of the actuator, a train of gearing including a driven gear, a ratchet mechanism for operating the gearing including an actuating lever operated by the ring rail, and a cam element which rotates with the driven gear and which is arranged to open the valve to cause operation of the actuator upon completion of each revolution of the driven gear.

DRAWING MECHANISM. Drawing mechanism for spinning and roving frames. Joseph Rabasa (to Saco-Lowell Shops, Inc.). USP 2 381 856, August 7, 1945. A weighting mechanism for one or more of the top rolls of a drawing mechanism for a spinning frame, which is provided with a horizontal roll stand beam, comprises "a lever fulcrumed on the rearward portion of said beam", connections from the rear of the lever to one or more of the top rolls, and a spring unit on the beam to act on the lever "to tension" the connections. The springs can be replaced quickly with others of different characteristics when different materials are to be drawn.

THREAD. Francois Feron (vested in the Alien Property Custodian). USP 2 382 704, August 14, 1945. A compound thread comprises a soft, relatively weak strand of Angora rabbit hair helically wound with a fine cotton thread that becomes completely embedded within the soft strand

to form a reinforcing core. The thread has the soft and fuzzy texture of Angora.

SPINDLE. Textile mill spindle. Herbert Gleitz (to The Marquette Metal Products Co.). Can. P. 429 311, August 7, 1945. A spindle comprises a bolster case; a bearing in the case; a shaft supported in the center of the case by the bearing; a drum on the shaft having an inner brake surface; a pair of brake-shoe elements with external circular braking surfaces next to the drum; circular guides for the shoe elements so they can move outwardly toward, and inwardly away from, the brake surface; means for actuating the brake shoes; external, peripherally-open, circumferential grooves in the shoes lying inwardly from the braking surfaces; and a C-shaped spring wire embracing both shoes, occupying the grooves, and located radically inwardly a substantial distance from the braking surfaces.

THREAD ROLLING APPARATUS. Joseph H. Hoern (to Eaton Manufacturing Co.). Can. P. 429 413, August 14, 1945. Thread-rolling apparatus comprises, in combination, a pair of co-operating dies having approximately parallel, flat faces and serrated in complementary cross-sectional configuration to the cross-sectional configuration of the threads to be formed on a workpiece received between the dies; and means for supporting one of the dies for lengthwise reciprocation, for keeping the other die from moving lengthwise, for yieldably urging the non-reciprocating die in a direction away from the path of movement of the first die, for moving the non-reciprocating die toward the path of movement of the movable die in opposition to the yieldable means, and for controlling the last-mentioned means so as to limit the movement "to a time subsequent to initial reciprocatory movement of one of said dies sufficient to rotate a workpiece between said dies through at least 180°."

SPINDLE SUPPORT. William J. Elvin and Charles Leo Hivick (to Camille Dreyfus). Can. P. 429 491, August 14, 1945. In a yarn-packaging device there are combined with a spindle and whorl assembly: a frame and a spindle-driving belt; a support for the spindle and whorl assembly to hold it in driving relationship to the driving belt, including jaws for clamping the support onto the frame; a slideway extending from one of the jaws; and a table supporting the spindle and whorl assembly, adapted to slide on the slideway for positioning the spindle and whorl assembly relative to the driving belt.

IV, 2a. Cotton, vegetable fibers

COARSE CARDING. Mill organizations vary for coarse carded yarns. C. Mallard Bowden. *Textile World* 95, No. 8, 100-01, 182, 184 (August 1945). Mill-to-mill variations in cotton, yarn numbers, and equipment cause wide differences in the technical organizations of mills producing coarse carded yarns . . . [as well as] variations in

. . . methods for determining drafts, doublings, and technical layouts." Typical organizations for a few coarse carded yarns are given to reveal the different practices. The yarns are 6.50s duck yarn, .70 hand roving, and 11.50s tire cord.

MULE SPINNING. Wiping down in mule spinning. Threfall's positive motion. Anon. *Textile Weekly 36,* 306, 308 (August 17, 1945). Mule carriages and roller beams are wiped down automatically by apparatus patented by Messrs. Richard Threfall, Bolton, England. The main features of this equipment are pointed out with the aid of two photographs.

SPINNING. Georgia operating executives answer spinning questions. Anon. *Cotton (U. S.) 109,* No. 8, 111-14 (August 1945). Typical answers received to the spinning questions in the fourth "meeting-by-mail" of the Textile Operating Executives of Georgia are printed. From these answers it is learned that: no one had actual experience with automatic quillers for filling re-winding machines; fingers are still best for picking top rolls; synthetic rubber top rolls and aprons are proving satisfactory; air-changing type humidification is well liked; about half the mills prefer acorn, and the other half clutch spindles; a non-fluid lubricant is best; and some prefer warp wind and others combination wind on Barber-Colman spoolers. Methods of stopping motion on warp frames, starting new spinning rings, and cleaning spinning frames are outlined in the answers.

IV. 2e. Winding

JUTE WINDING. Winding in the jute industry. "Non-stop" type CNS. Automatic winder for tubular cops. Anon. *Textile Weekly 36,* 310 (August 17, 1945). An automatic winder for jute-tubular cops marketed by Scharer Textile Machine Works, Switzerland, will produce cops much more rapidly than the pirn-winders used for many years by most jute-weaving mills. The machine is built in standard sizes of ten winding units on a single-sided frame. Each unit works independently of the others. A turret is fitted with three spindles. The winding process begins on the first spindle. When the cop has reached the desired length, the thread is threaded automatically on the next spindle and then is cut. The full cop remains on its spindle until the second cop is finished, and the change for the third spindle takes place, when the first cop is ejected automatically. The change of the full for the empty spindle requires only a fraction of a second.

SLASHING TENSION. Tension in slashing controlled electrically. R. B. Moore, General Electric Co. *Textile World 95,* No. 8, 115, 117, 186, 188 (August 1945). Tension of thread or cloth being wound can be controlled effectively by putting on the center-wind reel an individual, modern, electric motor of the constant-current type.

The current is controlled by an electronic regulator or a regulator employing a special rotating exciter, such as the amplidyne. To be successful, friction in the system should be reduced to a minimum, the ratio of maximum to minimum tension should be kept at about 5-to-1 or 6-to-1, and the diameter build up of the reel should not exceed 4-to-1 or 5-to-1 (unless one is willing to pay a high price for the equipment).

STRETCH WINDING. Apparatus for processing cord. George P. Bosomworth (to The Firestone Tire & Rubber Co., Inc.). USP 2 381 398, August 7, 1945. In apparatus for processing rubber-reinforcing cord there are means driven by a constant speed motor through a non-reversible worm gear for propelling the cord, means driven by a constant torque motor for applying a predetermined stretching tension to the cord, means for releasing a portion of the stretching from the cord, and an additional means for advancing the cord under a diminished, uniform tension.

THREAD-GUIDE DRIVE. Driving arrangement for thread guides, particularly for cop winding machines. Albert Brügger. USP 2 381 570, August 7, 1945. A driving arrangement for thread guides, particularly for cop winding machines, is provided with a worm-gear to cooperate with exchangeable reducing gears drivingly connected between the winding spindle and the traversing member of the thread guide. This arrangement allows the traversing member of the thread guide to move relatively slowly, while the winding spindle runs at high speed.

COP TUBE. Cop tube or hollow core for packages of yarn and the like. Harald L. Amrhein and Emil E. Fuller (to American Paper Tube Co., Inc.). USP 2 381 869, August 14, 1945. A cop-tube comprises a tubular fiber barrel contracted at one end to form a terminal portion of reduced diameter, and a plastic thimble molded around the end of the barrel surrounding the reduced terminal portion and extending into its interior to provide a bore of smaller diameter than that of the interior of the barrel. The method of manufacturing the cop-tubes is claimed also.

REEL. Donald C. Hardie (to Chipman Spinning Mills, Inc.). USP 2 382 790, August 14, 1945. A reel comprises a hub with a series of radial socket holes and longitudinally-extending flutings aligned with the holes; a skeleton body formed by radially-arranged components each fashioned from wire or the like, with a yarn-package engaging portion parallel to the axis of the reel, a leg portion the free end of which is recessed into one of the flutings of the hub, and a laterally-directed terminal projection engaged in the corresponding socket hole; and a retaining collar on the hub that fits tightly over the embedded leg ends of the reel-body components.

YARN-PACKAGE-HOLDER. Hans J. Theiler (to Whitin Machine Works). Can. P. 429, 339, August 7, 1945. In a textile machine having an up-standing system of horizontal rail members constituting a creel at the rear, there are on the creel yarn-package-holders to engage the conical holes of yarn packages. The holders are mounted on a rail to swing forwards and backwards. Means are provided for limiting the forward movement to hold the post at a low delivery angle "forward of" the rail. Means are also provided to act on the backward movement of the post to hold it in an upright package-receiving position in back of the forward position "whereby such creel can be serviced from the rear of the machine".

WINDING MACHINE GUARD. Charles Fleming Fitzgerald (to United Shoe Machinery Co., Ltd.). Can. P. 429 465, August 14, 1945. In a bobbin winding machine with a horizontal rotatable spindle for supporting a bobbin, a means for driving the spindle, and a starting and stopping control device for the driving means there is combined a guard for the winding spindle. The guard is hinged on the machine "at a location to enable the guard to be raised to an unstable position for inspection of the winding spindle and its center of gravity to be carried horizontally past the hinge for the guard to a stable raised position". A connecting rod between the starting and stopping control device and the guard is arranged for actuation by the guard to cause the control device to stop the spindle only when the center of gravity of the guard has been moved past the guard hinge.

YARN WINDING APPARATUS. Harold Stockton Cole (to E. I. du Pont de Nemours and Co., to Canadian Industries, Ltd.). Can. P. 429 746, August 28, 1945. In a yarn-winding apparatus provision is made for a yarn support, means for rotating the yarn support, a traversing member, means for shifting the traversing member back and forth axially with respect to the yarn support, a yarn guide mounted pivotally in the traversing member, an impact member adjacent to the yarn guide at one extreme end of its traverse stroke, another impact member on the yarn guide to contact the first impact member, and means for continuously changing the angular position of the first impact member. Both impact members have cooperating contact surfaces of area great enough that on their contact the yarn guide will assume on its pivot an angular position depending on the angular position of the first impact member at the instant of contact.

IV, 3. Processing and finishing

WRAPPING MACHINE. Joseph S. Pecker, Henry A. Simpson, and Abraham S. Kirshner (to Celanese Corp. of America). USP 2 381 078, August 7, 1945. A device for wrapping yarn packages comprises a wrapping head, including spaced

rollers for applying the wrapper and means for rotating the rollers at a constant speed; means for feeding the package intermittently to a position in vertical alignment with the wrapping head; and means for effecting relative movement between the wrapping head and the package.

WRAPPER. Wrapper for wound filamentary masses. Ferdinand A. Decker, Jr., and Lynwill K. Spangler (to American Viscose Corp.). USP 2 382 400, August 14, 1945. A cover for "wound annular filamentary packages" comprises permeable paper or paper-like material having "a multiplicity of spaced short slits arranged longitudinally in rows extending generally parallel to the axis . . . , the slits in some of the rows being staggered so that their geometric projections extend across the gaps between the slits in adjacent rows". This sort of cover is said to fit the packages better than the conventional type.

IV, 5. Applications as yarn

ROSETTE MANUFACTURE. Device for making rosette-like articles. Herbert Cottrell. USP 2 381 337, August 7, 1945. Rosette-like articles are formed by passing thread around a device comprising a circular flat member with radial tapered grooves in its top face and a recess in its bottom face, and a pin fitting in the recess that is readily removed from it.

SHOES. Footwear and method of its manufacture. David D. Goldstein. USP 2 382 559, August 14, 1945. A method of making shoes consists in preparing relatively thick and relatively thin braids of a fibrous material, winding the thin braids over the upper portion of a shoe last, winding the thick braid over the sole portion of the last, temporarily fastening the braids to the last, permanently fastening together the adjacent braids, and removing the product from the last.

ROPE. Textile product. Donald Finlayson (to Henry Dreyfus). Can. P. 429 344, August 7, 1945. Rope comprises a cabled assembly of strands built up from bundles of highly stretched, high-tenacity continuous filaments, practically free from twist. The filaments have as a basis saponified cellulose acetate. Their tenacity is at least 6 g. per denier. The rope is treated with a textile lubricant and copper naphthenate, the latter as a preservative.

IV, 5a. Coated or impregnated products

LUMINOUS ROPE. Richard F. Warren, Jr. USP 2 382 355, August 14, 1945. A rope for use about excavations, as a tow rope, for highway fences, etc., comprises material coated on at least portions with a luminous, *e. g.,* phosphorescent, preparation to make the portions self-illuminating and visible in the dark. The luminous portions are coated with a tough, flexible, elastic, and

translucent to transparent plastic to protect the luminous material from moisture and abrasion.

IV, 5b. Laminates

INSULATION. Thermal insulation material made from fibrous substances. Walter Garner (one-half to Lister and Co., Ltd.). USP 2 381 214, August 7, 1945. Thermal insulation comprises several layers of fabric into which are woven textile elements, *e. g.,* slivers, to connect the fabrics together; and a packing of fibrous material between the fabrics. The textile elements are in rows. The packing is in lengths lying between the rows. "Each of the textile fabrics has a weft in a direction transverse to the rows and a warp substantially only between the packing lengths."

V. YARN TO FABRIC

RAYON FABRICS. Production of fabrics from "Fibro". The necessity for adequate shrinkage. Anon. *Textile Weekly 36,* 458, 460 (September 7, 1945). Courtaulds, Ltd., feels that its product, "Fibro", a viscose rayon staple, has not been woven and finished properly to "do full justice to its intrinsic merits". Accordingly the company is holding an exhibit in Manchester, September 19 to October 2, to show the effect of various shrinkage allowances on the appearance, handle, and draping qualities throughout the various stages of manufacture of fabrics containing "Fibro". The factors affecting the final shrinkage allowance of the fabrics are listed. Shrinkage allowances should be set after examination of the first pattern piece which comes off the loom, and no deviation from the methods of finishing agreed on at this time should be allowed afterwards.

SPUN-RAYON WARPS. Spun-rayon warps more difficult on silk systems. Raymond Dodson, American Viscose Corp. *Textile World 95,* No. 8, 129, 174, 176 (August 1945). Spun-rayon warps are harder to handle on the silk system than on the cotton, but observance of the following precautions helps. The warp should be split into four layers to minimize rolling. The tension during beaming should be no more than that required to keep the warp taut. The sizing solution should be thin and applied at a high temperature. Blends and the method of preparation affect the formula of the size. Typical formulas are given for size for a 100% spun-rayon yarn prepared on the cotton system, a 50/50 spun-rayon wool blend prepared on the worsted system, and 100% spun-acetate yarn on an unspecified system.

V, 1. Preparation

YARN PREPARATION. Modern yarn preparation. The Barber-Colman super-speed warper. Anon. *Textile Weekly 36,* 318, 320, 322 (August 17, 1945). The working of the Barber-Colman Super Speed Warper for cotton and rayon is described with the aid of two photographs. Its effectiveness is illustrated by two tables taken from the report of the Platt Mission to the United States, showing the production and the labor required for it in beaming 12's, 20's, 30's, and 60's on the superspeed system in the U. S. and on conventional machinery in Great Britain. Labor requirements are much higher and output is much lower in England.

WARPING MACHINE. Theodore E. Carlson (to Celanese Corp. of America). USP 2 382 465, August 14, 1945. A machine for warping threads is furnished with a guide bar over which the threads pass, a reed frame cooperating with the guide bar, bent wires in the frame for spacing the threads, and means for reciprocating the frame vertically to cause the threads to move laterally with respect to the guide bar and longitudinally with respect to the wires. The wires are bent or curved in the plane of the frame to prevent the yarn from getting nicked from bearing against the dent wires and/or bar guides at some one point.

WARPING MACHINE. Georg Wiggermann (vested in the Alien Property Custodian). USP 2 382 760, August 14, 1945. A "warping machine, in which, notwithstanding the journalling of the pressure roller on swinging arms, the pressure in the line of contact between the beam and pressure roller remains always invariable", has a beam element; a pressure-roller element coacting with the beam; means for rockably supporting each of the elements; a driving means arranged coaxially with the rocking axis of one of the elements and drivingly connected with the "latter element"; means for pressing the elements together with a predetermined pressure so arranged that its resistance must be overcome to alter the relative position of the elements; a rack and pinion connecting the rockable support of the driven element with the friction-resistance means; and means, including the friction-resistance means, to move the driven element through the rack and pinion.

UNWINDING YARN. Yarn unwinding device. Aleidus Gerard Bouhuys and Harry Bourne (to Cornelius Constantinus Vanderhooven). Can. P. 429 346, August 7, 1945. Kinking of highly twisted thread in the outer layers of a supply package, maintained stationary when the thread is withdrawn progressively from the outside to the inside of the package during the unwinding operation, is prevented by placing on the thread prior to its withdrawal tension sufficient to maintain the thread coils in place, but insufficient to impede its withdrawal.

V, 2. Sizing

POTASSIUM PERSULFATE. Applications of potassium persulfate in the textile industry. D. Blanxart. *Ion 4,* 892-3 (1944). Abs. *Chem. & Met. Eng. 52,* No. 8, 216 (August 1945). Potassium persulfate is superior to bichromate as an oxidizing

agent in the dyeing and printing of textiles with indanthrene, algol, ciba, ponsol, sulfanthrene, sausothrene, and similar dyes. The fabrics are immersed about two minutes in baths containing three to five thousandths of the persulfate at a temperature of 40-50°C. The solution is colorless and has no effect (except that of a bleach) on light colors or whites. The reaction is fast. Potassium or ammonium persulfate is used also in a procedure for determining the coloring used in a dye-sample.

SIZING. Animal glue as a sizing agent. National Association of Glue Manufacturers, Inc. *Textile Colorist & Converter 67,* 920, 937 (August 1945). Animal glue is used as a sizing primarily to prevent chafing and breakage of the thread in weaving, not to increase the tensile strength. The size must not diminish the natural elongation of the yarn. Glue for sizing rayons should be softened in cold water before being heated to 150°F. for use. The sizing mixture includes, besides the glue, softeners, body oils, and preservatives. Cocoanut oil is a widely used body oil. Methods of applying the size to different types of rayon are mentioned.

V, 3. Weaving

LOOM FIXING. Draper loom fixing. II. Ben H. Crawford, West Point Mfg. Co. *Cotton (U. S.) 109,* No. 8, 107-10 (August 1945). The duties that may be assigned to the loom fixer (in addition to that of repairing broken looms) are listed, and a simply-worded explanation of weaving is given. The methods of indicating the weave and the drawing-in and chain drafts, and the fundamental loom motions are diagrammed. Dobby and Jacquard attachments for box looms are considered in two paragraphs.

RAYON WEAVING. Common rayon weave room problem—H. E. Wenrich. *Rayon Textile Monthly 26,* 395-6 (August 1945). The order in which looms that are down should be fixed by the weaver, when to call a fixer, how to pick back, and some of the causes of broken picks are discussed in this short article dealing with rayon weaver's troubles.

TRAINING WORKERS. Training recruits as weavers of silk and rayon. Notes and reminders on the guidance and instruction of "new blood". Anon. *Silk & Rayon 19,* 886-7 (August 1945). Apprentice-rayon and -silk weavers should be taught the properties of these fibers, the counts systems for the yarns, common designs, the appearance of cloths containing common weaving faults and their causes, the care of shuttles and the changing of bobbins, the making of knots, the functions of looms, the construction of tappets with different weaves and dwells, the construction of dobbies, and the principles of jacquard construction. Instruction should be given by experienced weavers. The first practical instruction should be with cotton on the tappet loom. The chief points that need to be demonstrated are discussed quite briefly.

V, 3a. Looms

LOOM. Wilson and Longbottom's new rayon and silk loom. Anon. *Silk J. Rayon World 20,* 32, 34-5 (July 1944); abs. *Textile Research J. 15,* 291 (August 1945). "A description of a loom designed to meet the needs of manufacturers of high-class rayon textiles and of silk. Details described are: the type and scope of the dobby; style of picking; checking, take-up and drop-box motion; reed movement; unwinding of warp; and loom driving. It is stated that the speed of the loom depends partly on the quality of the yarns used, but if they are good that the speed is 180 picks per min. The loom is driven by a cone-friction clutch with pulley drive, although a geared drive may be used. The h. p. is 1.6, r. p. m. 950, and reed space 51 in."

V, 3b. Loom parts

LAY MOTION. Lay motion for looms. Robert J. Bartholomew (to Fletcher Works, Inc.). USP 2 381 028, August 7, 1945. A lay motion for looms, particularly of the "narrow fabrics" type, comprises a reed consisting of a series of H-shaped offset blades whose lower front and lower rear vertical portions are far enough apart to receive a lay beam between them; and means for reciprocating the blades vertically, en masse, in coordination with the oscillations of the lay. This lay motion reduces the throw of the lay-operating cranks of narrow fabrics looms from about 4½ in. to 1¼ in.

SHUTTLE. John Kyle Dudley. USP 2 381 042, August 7, 1945. A shuttle for a narrow fabric loom has a bobbin-receiving recess formed between the transverse end walls spaced apart along the length of the shuttle. One of the end walls has a complementary recess formed in it for receiving a disc-like head on one end of the bobbin. It also has a relatively thin-edged rib-like projection on the wall in a transverse plane between the recesses that engages one face of the head between the face and an adjacent end face of a body of thread wound on the bobbin.

RELEASING-TUBE ADAPTER. Releasing tube adapter for supporting tubes or the like. George B. Markle, Jr. (to Freeland Spool and Bobbin Corp.). USP 2 381 301, August 7, 1945. A releasing-tube adapter comprises: a barrel having a number of grooves; spring-actuated blades mounted in the grooves, the outer faces of the blades being provided with grooves to receive friction-producing material; means for preventing longitudinal movement of the blades in the grooves; discs carried by the barrel to limit the outward movement of the blades in the grooves; and on the blades tapering fingers adapted to be engaged by a ring-tube releasing member.

HEDDLE FRAME. George R. Plott. USP 2 381 308, August 7, 1945. A loom-heddle frame having horizontal frame members provided with end bars forming a part of the frame has cavities in one side of the end bars, has a pair of heddle bars whose

ends are adapted to fit into the cavities, has mounted on the end bars slidable members adapted to fit over the ends of the heddle bars, and has means for securing the slidable members to the ends of the heddle bars.

LOOM SHUTTLE. Carl D. Brown (to Draper Corp.). USP 2 381 333, August 7, 1945. A shuttle for an automatic loom is provided with a pair of spaced vertical pins in the front wall, close to the side delivery eye, and with a bolt passing through a hole between the pins and through the threading block to hold the threading block in position. The body of the shuttle is counterbored between the pins to receive the head of the bolt and to provide a seat for the shuttle head on the pins. Pins made of vulcanized fiber are mentioned in the specification.

BOBBIN. Spool or bobbin for supporting yarn, thread, cord, or the like. Harald L. Amrhein and Henry J. Feeley (to American Paper Tube Co., Inc.). USP 2 381 870, August 14, 1945. A spool or bobbin comprises a tubular barrel having a peripheral groove next to its end, notches spaced around its end portion, and a head of plastic material molded around the end of the barrel and projecting radially outwards beyond its periphery. The head has an integral thimble portion molded inside the barrel and formed with an axial bore extending through it.

BEATER. Weft beat-up mechanism of looms for weaving. Derrick Walter Shimwell. USP 2 382 511, August 14, 1945. A weft beat-up mechanism for a loom of the type in which the reed does not effect beat-up comprises a beat-up comb and means for guiding and moving the comb through a closed path in which it enters the warp threads next to the reed from above, travels to the beat-up point and effects beat-up, withdraws with an upward movement from the warp threads, and returns to its entry point to start the next beat-up operation.

LOOM HARNESS. John Jacob Kaufmann (to Steel Heddle Manufacturing Co., Inc.). USP 2 382 795, August 14, 1945. Heddles of thin, flat, strip metal are made with the usual central warp eye, mortises at each end for mounting on rods, and straight portions above and below the central warp eye to a point beyond the shed line, but they also have portions bent out of the plane of the main body-portion of the heddle to provide longitudinal flexibility. The bent-out portions are between the straight portions and the end portions, and are cut away to provide a reduced cross-section at those points.

V, 3c. Control devices; stop motions; bobbin selectors

BOX MOTIONS. 100 years of chain control for loom box motions. C. W. Bendigo, *Textile World. Textile World 95,* No. 8, 87-91 (August 1945). An illustrated historical sketch of the development of the chain control for loom-box motions starts with its description as a part of a loom patented by L. S. Diggle in 1845 (Brit. P. 10 465). Lucius J. Knowles and George Compton, rival American loom builders, incorporated Diggle's ideas in their looms. The chain-control principle is still used in fully automatic looms, whose box-changing difficulties were solved in 1907 by Eppa H. Ryon. Five diagrams and nine photographs amplify the text.

TENSION CONTROL. Automatic tension control for let-off mechanism of looms. Yervant H. Kurkjian. USP 2 381 670, August 7, 1945. An automatic control for the let-off mechanism of looms, which controls the tension of the brake band of the warp beam, comprises a tension-control arm contacting the beam and controlled by the amount of warp carried by it, means for braking the beam, a lever for controlling the brake, tension means connecting the lever with the arm to hold the arm in contact with the warp, connections between the brake and the lever, and means for linking the arm with the connections for shifting the connections relative to the lever to adjust the leverage automatically as the arm is swung.

BOBBIN MAGAZINE. Bobbin magazine for weft replenishing looms. Clifford Darwin (to Crompton & Knowles Loom Works, Inc.). USP 2 381 725, August 7, 1945. A reserve-bobbin magazine for a weft-replenishing loom has the bottom of the outside bobbin tip guiding end plate made solid for strength and to hold the tip-supporting shoulders permanently in position with respect to the bobbin supports. The end plate is provided with guide wires (to replace the conventional slot in the plate) extending along the outer sides of the plate. The weft ends move along these guide wires as the bobbins travel toward transfer position.

BOBBIN MAGAZINE. Bobbin magazine for weft replenishing looms. Richard G. Turner (to Crompton & Knowles Loom Works, Inc.). USP 2 381 790, August 7, 1945. In a weft-replenishing mechanism capable of operating with stacks of bobbins of different bobbin-butt diameters, the bobbin magazine is constructed with an adjustable wall the lower part of which is curved toward the bobbin support. The guideways for the butts can be varied to accommodate butts of different diameters, and to allow a large amount of contact between the cylindrical portions of the wound yarn in cases where the yarn diameter is less than the butt diameter. The bobbins are made to move freely from the adjustable wall to the support as they roll down to the transfer position by having the wall and support formed of overlapping parts which extend in the direction of butt travel.

LOOM. Samuel P. Parker (to Callaway Mills, Inc.). USP 2 382 741, August 14, 1945. A warp stop motion for a loom making terry cloth comprises a vertically reciprocatable contact bar, a rotatably driven cam, and means operated by the cam so constructed and arranged as to reciprocate the contact bar into and out of operating position at regularly recurring intervals. This arrangement relieves the

very slight tension under which the warp operates and prevents the stop motion's operating as a result of the sagging of the terry warp yarns, *i. e.*, when they are not broken.

V, 3d. Processes

TAPES FOR SLIDE FASTENERS. Method of producing stringer tapes for slide fasteners. Lee Campbell. USP 2 380 939, August 7, 1945. Mating slide-fastener stringer tapes are made by "forming a strip of textile fabric to provide a pair of stringer tape defining areas disposed in side-by-side closely spaced relation connected together by longitudinally spaced groups of weft thread leads which extend completely across the strip in bridging relation to the space therebetween, simultaneously securing an edging to the inner edge of each tape defining area and then severing the connecting groups of weft thread leads which bridge the space between the stringer tape defining areas."

V, 3e. Defects

DEFECTS. Reduction of missing picks. I & II. "Diplomist." *Textile Weekly 36*, 402, 404, 406 (August 31, 1945); 462, 464, 466 (September 7, 1945). The first two articles in a series dealing with the causes and remedies of missing picks cover the subject for wool and worsted, in the first, and cotton and rayon in the second. Worn or improperly made bobbins and poor action of the weft fork give trouble in all cases. Faultily spun yarn and cut wefts are particularly troublesome in weaving wool. Weak wefts, snarls, and worn pickers are especially troublesome in weaving cotton. The fineness of filament rayon and its peculiarity of dyeing differently from the body of the cloth when stretched beyond the point of recovery are the chief distinctively troublesome factors in weaving rayons. Stop motions are recommended for rayons, because by the time the operator notes a missing or overstretched pick, it is too late to remedy it by darning—the inserted pick will dye differently. "Fibro" rayon is an exception to the above rule.

V, 4. Knitting

KNITTING MACHINE. Cotton's Patent and other straight bar knitting machines. William Gordon Macdonald and William Arthur Cooper (to William Cotton, Ltd.). USP 2 381 072, August 7, 1945. A pattern-controlled mechanism for lowering the welt rod on to the fabric at the appropriate time is claimed for use on Cotton's Patent and other straight-bar knitting machines. In these machines the fabric is drawn away from the needles by a welt bar equipped with "welting instruments", the welt rod is then placed on the fabric, the fabric take-up straps are connected to the ends of the welt rod, and the initial course of the welt fabric is returned to the needles over the top of the welt rod by suitable movement of the welt bar.

KNITTING MACHINE. Isaac H. C. Green and Eugene St. Pierre (to Hemphill Co., Inc.). USP 2 381 275, August 7, 1945. In a circular knitting machine with independent needles, and main and auxiliary cam blocks, there are: a cam in advance of the stitch cams of the auxiliary cam block for raising needles from a position at which any loops on them are around the latches to a sufficient height to cause the loops to pass below the latches; a second cam to lower the needles again to their previous position; a third cam between these cams and the stitch cams for guiding the needles so they will knit under the first stitch cam; and a fourth cam for raising the needles immediately to the same height as that to which they were raised by the first cam.

JACK. Part for knitting machines. De Hart G. Scrantom (to Western Electric Co., Inc.). USP 2 381 370, August 7, 1945. A jack for holding nibs of knitting needles comprises an arm having a notch in it to form a pair of jaws for grasping the needle. The notch has straight sides at the mouth to provide straight gripping surfaces at the ends of the jaws. The arm is also provided with a slot extending from the notch to give the jaws resiliency.

SLUR CAM. Slur cam for knitting machines. Frank G. Weisbecker. USP 2 381 376, August 7, 1945. A slur cam for imparting motion to the sinkers of a straight-bar knitting machine comprises: a nose portion having a practically straight working face and at its ends divergent surfaces extending toward the rear; a bar slidably mounted on the nose of the cam, having the general shape of the nose, but with its straight working face longer than the corresponding face of the nose; and means on the cam engaging the bar to retain it with its straight working face parallel to and slightly set back from the corresponding face of the cam. The retaining means also limits the sliding movement of the bar relative to the cam.

KNITTING MACHINE. Circular knitting machine. Thomas Charles Bromley and Arthur Shortland (to Mellor Bromley & Co., Ltd.). USP 2 381 641, August 7, 1945. A main and an auxiliary timing and controlling mechanism are provided for a circular knitting machine. The main mechanism, which is of conventional form and arrangement, is used to change the speed or motion of the machine, and to produce variations in the quality of the knitted fabric. The auxiliary mechanism, which is arranged about the axis of the needle cylinder(s), controls the movable cams in the cam system(s), the yarn-changing means, the picker mechanisms, or/and other parts of attachments usually assembled around the cylinder(s).

KNITTING MACHINE. Cotton's patent and other straight bar knitting machine. William Arthur Cooper (to William Cotton, Ltd.). USP 2 382 544, August 14, 1945. A straight bar knitting machine, with take-up straps or equivalent flexible means for attachment to a device for drawing the fabric away from the needles, is provided with a rotary member to which the straps are attached. This rotary member rotates in one direction to wind

up the straps and to draw off the fabric, and in the reverse direction to unwind the straps (*e. g.*, so that they may be attached to the welt rod, or the like). A second rotary member is coupled to the first one in any of several ways. Flexible connections extend from the straps to the second rotary member, and are arranged to be wound onto the latter in reverse rotation, so as to withdraw the straps from the first member and be unwound from it during the fabric take-up rotation of the first member. A spring coupling, a solid drive, or a spring coupling that gives way to a solid drive after a predetermined yield can be used to couple the two rotary members.

ADJUSTABLE CARRIER RING. Eugene St. Pierre and Joseph Wawzonek (to Hemphill Co., Inc.). USP 2 382 750, August 14, 1945. In a circular, independent needle, knitting machine having several independently- and vertically-adjustable knitting-cam supports, the carrier ring is provided with yarn levers above each of the knitting-cam supports and with means for maintaining the yarn levers at definite vertical distances above their respective knitting cam supports regardless of alterations in the vertical position of the knitting cam supports. Thus, the exact angle at which yarn or yarns are fed to the needles is maintained exactly, which is important in knitting fine-gauge hose.

KNITTING MACHINE. Pattern drum operating mechanism. Joseph Wawzonek (to Hemphill Co., Inc.). USP 2 382 757, August 14, 1945. The pattern drum of a circular knitting machine is operated by a device consisting of a toothed-ratchet wheel fixed to the drum; a recess in one edge of the ratchet; an insert, located in the recess, the outer end of which is at least flush with the tips of the teeth; a pawl to engage the teeth of the ratchet to turn the drum; and means for positioning the pawl so it can engage all the teeth of the ratchet and also so it can engage all the teeth with the exception of those in alignment with the insert.

KNITTING MACHINE. Ivan W. Grothey (to Scott & Williams, Inc.). USP 2 383 008, August 14, 1945. A circular knitting machine comprises a needle cylinder, a dial, needles slidable in the cylinder and dial, cleaning jacks located in slots in the needle cylinder behind the needles, and means for imparting sliding movements to the jacks and for raising the jacks to back up the needles during the drawing of loops by dial needles during rib knitting.

KNITTING METHODS. Knitting method and apparatus. Raymond Krester. Can. P. 429 635. August 28, 1945. Claim is made to "the method of knitting a multi-yarn fabric of a variegated coloured pattern comprising the steps of knitting each one of a plurality of yarns, each yarn being individual to a needle and being fed exclusively to one of the needles of a multi-feed knitting machine, in intermittent courses to form an intermittent series of individual loop stitches from a single yarn throughout the stitch formation, said stitches extending wale-wise of the fabric, from each of said yarns, a plurality of

needles to form a series of cross-wise stitches, floating the said course-wise stitch forming yarns across the warp stitches, and floating the said warp stitch forming yarns across the course-wise stitches in the courses where said warp stitches are not formed."

KNITTING APPARATUS. Raymond Krester. Can. P. 429 636, August 28, 1945. Knitting apparatus comprises, in combination, a needle cylinder, several cams, yarn guides, a bobbin rack, and a spool rack. Each of the cams is provided with a pattern wheel and is designed to raise selected needles not raised by other cams. One or more of the cams is provided, exclusively, with yarn-guiding means, stationary with respect to it, for feeding yarn to all of the needles selectively raised by the cam. One or more of the cams is provided, exclusively, with yarn guides, movable with respect to it, for feeding an individual yarn to each of the needles selectively raised by the cam. The bobbin rack is stationary with respect to the first yarn guides and the spool rack is stationary with respect to the second. The spool rack includes "a plurality of spool supporting members arranged in frusto-conical formation above the . . . cylinder and a yarn guiding and spacing plate arranged intermediate said spool supporting members and said needle cylinder." One claim is specific to the spool rack.

KNITTING MACHINE. Knitting machine stop mechanism. George Wilders and William Gordon Macdonald (to William Cotton, Ltd.). Can. P. 429 677, August 28, 1945. In a straight-bar knitting machine of the kind having a draw mechanism capable of being disconnected from its driving mechanism, and a friction brake for bringing the disconnected draw mechanism to rest, there is combined with a rotatable part of the draw mechanism, a positive-locking means to lock the draw mechanism in a predetermined position of rest. The lock means comprises a projection on the rotating part; a slidable member movable into, and out of, the part of the projection; means for restraining the slidable member against rotation with the projection; and means for moving the slidable member into the path of the projection when the draw mechanism is disconnected.

COVERING STRANDS. Strand covering knitting apparatus. Clyde Norton Stover (to Western Electric Co., Inc). Can. P. 429 737, August 28, 1945. A method of knitting a multiple-fabric covering on an electrical conductor comprises passing the conductor through a knitting head in one direction to produce a first covering with its ridges on the outside, and passing the covered conductor through a second knitting head in the opposite direction to apply a second covering with its ridges inside, between the ridges of the first covering.

V, 5. Pile fabrics, laces, embroideries, netting

COTTON GAUZE. Chemical treatment produces elastic cotton gauze. Anon. *Textile World 95,* No. 8, 131 (August 1945). "A new surgical

gauze bandage with elasticity and clinging powers has been developed by Charles F. Goldthwait and James H. Kettering of the Southern Regional Research Laboratory . . . The bandage . . . has already been subjected to more than 9,000 tests . . ." The gauze is mercerized to expand the yarn, loosen the contruction, and decrease the size of the inter-spaces. The fabric is easily stretched, but when the tension is released it returns nearly to its original dimensions. Photomicrographs show the gauze before and after treatments.

ELECTROCOATING FABRICS. Electrocoated fabrics process now ready for commercial application. Anon. *Textile Bull. 68,* No. 12, 23 (August 15, 1945). General Electric Co. claims that pile fabrics three times as durable as their woven counterparts can be made by electroplating loose flock fibers onto adhesive-coated cloth. As many as 300,000 fibers per square inch of fabric can be introduced, and each fiber is exactly perpendicular to the base. Since the flock sticks only to the portions of the backing cloth having adhesive on them, designs can be produced on smooth fabrics. Paper, cellophane, and leather can be substituted for the cloth backing. The flock is on a conveyor-belt that moves parallel to the backing sheet, and both belt and sheet run through a high-voltage electrostatic field. The fabric is cured in a drier.

PILE FABRIC. Ezekiel J. Jacob (to Benjamin Liebowitz). USP 2 381 218, August 7, 1945. A woven heating pile fabric having a fabric base and piles projecting from at least one face has the piles made of glass filaments and the fabric base of glass filaments and fine, uncovered, electrically conducting, metallic wires incorporated in spaced fillings of the fabric base at spaced intervals from the pile face. Asbestos and plastic filaments may be substituted for the glass, as is disclosed in the specification.

LACE MACHINES. Take-up for twist lace machines. Albert Edward Hunter (to Byard Manufacturing Co., Ltd.). USP 2 382 230, August 14, 1945. In a twist-lace machine, there is a kidney-shaped, rotatable, fabric-takeup member having a rim whose various portions are at different distances from the axis about which the member rotates. The machine can be used for making hair nets and other bag-shaped articles.

CLOTH MANUFACTURE. Bolting-cloth and grit gauze manufacture. Robert Andrew McFarlane (to Courtaulds, Ltd.). Can. P. 429 408, August 14, 1945. Bolting cloth, grit gauze, and the like consist of non-thermoplastic, artificial threads in a leno weave, with the meshes fixed by a resin-like condensation product obtained by condensing a polyhydric alcohol with a polybasic acid.

V, 6. Mechanical processing

BOARDING HOSE. More efficiency in the boarding room. John W. Harrison. *Cotton (U. S.) 109,* No. 8, 158, 161-2 (August 1945). To get the most out of labor in the boarding room of the hosiery plant, the mill operator is advised to employ a sensible foreman, preferrably one up from the ranks, who will not drive the workers; and to divide the jobs into skilled, semi-skilled, and unskilled. The hose drying system should be designed for maximum circulation through the forms and the lowest possible heating costs—a free-flowing steam circuit is advocated. Floors should be kept as smooth and clean as possible so that hose accidently dropped need not be spoiled.

REINFORCED FABRIC. Reinforced textile fabric and process of making. George K. Ripley (to Troy Blanket Mills). USP 2 381 184, August 7, 1945. A laminated textile material, made of flat, reinforced textile fabric having a top face, a bottom face, ends, and parallel sides made of unspun textile fibers and a plurality of lateral threads, comprises: a lateral sheet of textile fibers folded diagonally back and forth between the sides of the fabric, and a plurality of lateral threads parallel with the edges of and placed on one face of the sheet; a plurality of longitudinal threads which do not penetrate, and which are parallel with the sides of and rest on one face of the fabric; and a longitudinal sheet of textile fibers extending between the sides of the fabric and over the longitudinal threads. The material embodies in its structure loops and fibers of the sheets and of threads carried vertically from a face of the material into the body of the material. The method of making such laminates is claimed also.

V, 7. Products; design; construction

CARPET INDUSTRY. Carpet industry plans for peacetime business increase. Leroy A. Beers, Institute of Carpet Manufacturers of America, Inc. *Textile Age 9,* No. 8, 48, 50, 53 (August 1945). The sales campaign the carpet industry plans to launch is outlined. It is intended "to serve the American home with 50 per cent more woolen floor coverings than was produced during the five years immediately preceding the war."

INDUSTRIAL COTTONS. Industrial cotton fabrics. B. Monsaroff. *Can. Chem. Process Industries 29,* 458-60 (June 1945). Digest in *Bull. Institute Paper Chem. (Library Notes) 15,* 460 (August 1945). "The chemical properties and physical structure of cotton are reviewed briefly to bring out the peculiar properties of the fabrics made from cotton and to give a better understanding of the problems arising from their use in industrial practice. Essentially, cotton is very reactive, and slight changes in surrounding conditions will affect its normal structure . . . The chief deteriorating influences are heat and acid, particularly when the fabric is exposed to both at the same time. Drier felts on papermaking machinery represent one of the largest fields of industrial application . . ."

SELLING TEXTILES. Articles in *Linens & Domestics 30,* No. 5A (August 31, 1945). Anon. The following articles are included: Sheets: cate-

chism of fundamentals for retail selling, pp. 46-7; Dictionary of sheeting terms, p. 48; Spots and stains: information for salespeople to pass on to customers, p. 54; Dictionary of blanket buying and selling terms, pp. 56, 58; When salespeople discuss wool blankets over the counter with folks, pp. 60, 62; and Manufacturers' booklets, by Eleanor Vatcher, pp. 66, 68, 70, 72, 74, 76, 78. The last article gives short abstracts of the pamphlets covering blankets, turkish towels, sheets, tablecloths, bath mats and rugs, shower curtains, washable table mats, curtains and bedspreads, cotton, linen, lace, rayon, synthetic and natural fibers, and miscellaneous topics such as spot-removal, ironing, and quilt patterns.

SPUN RAYON. Fine spun viscose plain weave fabric. Anon. *Am. Wool Cotton Reptr. 59,* No. 36, 11-12, 16 (September 6, 1945). Fabrics woven in a plain weave from fine single or two-ply rayon yarns are gaining acceptance and probably will be manufactured in increasing amounts as mills start up again. (The number of spindles in the United States decreased more than 15,000,000 during the War.) The requisite yarns are made from relatively short fibers, their strength is increased by combining threads of different deniers, and the same standard twist is given to yarns for both warp and filling. One cloth having warp and filling of 80/2 spun viscose, made in an 88 x 88 gray count (95 x 90 finished count), is analyzed. It can be made (gray) for 38¢ a yard.

TWEEDS. Utility sportswear tweeds. The use of colour mixtures. "Portex". *Wool Record & Textile World 68,* 234-5 (August 9, 1945). The wide variety of effects to be obtained in sportswear tweeds by changing the colors and the weaves is illustrated by nine patterns.

WOOLENS. Piece-dyed wool dress cloths. Special quality characteristics. "Portex". *Wool Record & Textile World 68,* 189-90 (August 2, 1945). Light-weight woolen fabrics for dresses are made from cashmere, alpaca, and angora blends with wool. The yarns employed are spun to medium and fine counts (24 to 40 skeins), and are usually single. Seven weaves are given for fancy effects—granite construction, twill weave, combinations of ordinary and reverse twists, combinations of single- and two-fold yarns, a herringbone effect, and a combination of a fancy twist chenille yarn with a plain Saxony woolen.

SHOE STIFFENER. Walter H. Heaton. USP 2 381 590, August 7, 1945. A shoe-stiffener material comprises a double-napped flannel saturated with a colloidally dispersed stiffening. The flannel has a relatively rough mat-finished surface on one side and a relatively smooth compact surface, formed by laying the nap down, on the other side.

IRONING BOARD COVER. Herbert E. Sunbury (to United States Rubber Co., Inc.). USP 2 382 830, August 14, 1945. A long-lived, fire-resistant cover for household ironing boards comprises a woven fabric having a body area formed of asbestos warps and asbestos wefts interwoven in a broken twill weave, and integral side borders formed of interwoven cotton warps and asbestos wefts. This provides a smooth, non-inflammable fabric for the top of the board and more flexible borders to conform closely to the rounded side edges of the board. The warps in the body area are: larger than the wefts, disposed predominantly at the ironing surface, and impregnated with a fiber-laying resin. The resin lowers the friction between an iron moving over a wet material to a value below that of an iron moving over dry material. This invention is stated to be an extension of the Foster patent (US 2 180 515).

BLANKET. Blanket and fabric. Samuel E. Staines (to Botany Worsted Mills). Can. P. 429 260, August 7, 1945. Fabric for a blanket comprises warp members crossing periodically to form spaced twists, through which the filling passes and from which the filling periodically diverges to pass between other twists formed by the warps in order to form interstices. The filling material comprises a core with a thread wound spirally in successive convolutions to provide air spaces along the outer surfaces of the fillers. A nap is raised on both sides of the fabric, chiefly from the spirally-wound filling, and overlies both sides of the air spaces formed by the spirally-wound thread and the interstices.

FIRE HOSE. Water resistant woven structure. Frederick Thomas Peirce and William Charles Gardiner (to The British Cotton Industry Research Association and F. Reddaway and Co., Ltd.). Can. P. 429 748, August 28, 1945. Fabric resistant to water under pressure for use in fire hose, etc., is made wholly or in part from twisted, multiple-cotton yarns made from single yarns mercerized while under heavy tension, and dried under controlled conditions of tension and temperature. The yarns are woven under considerable tension into a fabric of very dense structure. The construction of the yarn and cloth are indicated in detail in one claim. The yarn can be impregnated with mold-inhibiting agents. A portion of the warp yarn can be ramie.

V, 8. Applications: nontextile uses of fabrics

GLASS TEXTILES. Glass textile uses. Anon. *Textile Bull. 69,* No. 1, 18 (September 1, 1945). Plastic body armor, "Doron", made by combining "a newly-developed resin" with glass cloth under pressure to form a hard and rigid plate was developed chiefly by Monsanto Chemical Co., according to recent announcements. A neoprene-coated Fiberglas cloth has been adopted by TWA for supporting fabric for plane seats, for crew bunks, and for steering gear dust boots.

V, 8b. Coated or impregnated products

BOOK-BINDINGS. Synthetic resins enhance today's book-bindings. Richard A. Borton, L. E.

Carpenter & Co. *Textile World 95,* No. 8, 104-5 (August 1945). A short description of the manufacture of cloth for book-binding states that synthetic resins can be used for imparting a leather-like appearance. Thermosetting polyvinyl butyral, polyvinyl chloride, improved types of nitrocellulose and ethylcellulose, cellulose aceto butyrate, cellulose aceto propionate, and a variety of synthetic rubbers can be employed. The resins are "permanently non-oxidizing and retain their flexibility over an unlimited period". Six photographs show the manner in which cloth is finished with these resins.

LEATHER SUBSTITUTE. Develops coated textile to replace cowhide. Anon. *Textile Age 9,* No. 8, 115 (August 1945). A heavy, plastic-coated textile with the sturdiness, abrasion resistance, wearing qualities, and appearance of cowhide was developed under the direction of the Jeffersonville Quartermaster Depot for use in sport goods, such as footballs.

INFLATABLE HOSE. Method of making inflatable hose. John A. Muller and Lawrence Cranston (United States Rubber Co., Inc.). USP 2 381 074, August 7, 1945. Long hose or tubing can be made by folding inwardly toward each other the longitudinal side portions of a strip of rubberized fabric and securing the edges of these side portions together to form a tube, providing an agent within the tube to prevent the inner walls from adhering together, and then introducing successive lengthwise portions of the flattened tube into a vulcanizing press. Since the tube is vulcanized in a flat condition, the tube normally will lie flat and has permanent lines of fold along its opposite sides.

OILCLOTH. Flat coating composition and an oilcloth made therefrom. Clifford M. Lent (to Interchemical Corp.). USP 2 381 915, August 14, 1945. A coating composition, which dries to a dead flat flexible film, comprises a dispersion of pigment in a vehicle, the major constituent of whose binder is a drying oil. The ratio of pigment volume to binder volume does not exceed about 1.0. Gloss is prevented by dispersing in the composition a small percentage of an aqueous fluid with a pH adjusted approximately to slightly below the pseudo-isoelectric point of the pigment.

V, 8c. Laminates

CONOLON. Airborne laminate. Anon. *Chem. & Met. Eng. 52,* No. 8, 138 (August 1945). Conolon, a laminate made by impregnating glass fabric or extra-strong rayon with a new sort of thermosetting resin, has been in use for some time by the airplane industry, but information concerning it has been released only recently. At 75°F. it has a specific gravity of 1.65; a Young's modulus in tension parallel to the grain of 4,700,000 psi; an ultimate column stress parallel to the grain of 53,000 psi; an ultimate tensile stress of 120,000 psi; an ultimate flexural stress of 100,000 psi; an ultimate shear stress at right angles to the grain of 21,350, and parallel to the grain of 5,000 psi; a Rockwell M hardness of 98-100; and a Riehle impact resistance, flatwise, of 120 ft. lb. per. sq. in. The gain in weight on immersion in distilled water, aromatic gasoline, benzene, acetone, boiling water, seawater, 5 and 30% hydrochloric acid, and 1 and 10% sodium hydroxide is tabulated.

LAMINATES. An evaluation of low pressure laminates. L. M. Perdue, Boeing Aircraft Co. *Plastics 3,* No. 3, 38, 40, 132-3 (September 1945). A discourse on the development, manufacture, and uses (chiefly military so far) of low pressure laminates, usually made from strong paper and suitable resins, mentions the fabrication in hat-press equipment of small laminated airplane parts made from impregnated stretchy fabrics. Cloth can be coated with a wide variety of liquid resins; these penetrate and solidify in the cloth, which can be laid up dry. Laminates made from Fiberglas cloth are superior to aluminum alloys for some parts of airplanes.

MOISTUREPROOF LAMINATE. Moistureproof packaging material. Anon. *Chem. & Met. Eng. 52,* No. 8, 140, 142 (August 1945). Moistureproof, tough wrapping material consists of sheets of aluminum foil with a vinyl resin coating and a cloth backing. It is being made at a rate of more than a million yards a month for wrapping airplane engines by Plastic Film Corp., New York, the first producers, and Dobeckmun Co., Cleveland, who call it Plastin and Metalam, respectively. Both are the same essentially, but Plastin is made by coating the foil with liquid resin and Metalam by bonding the foil with pressure and an adhesive to preformed resin sheets supplied by Goodyear under the name of Vitafilm. Production will increase soon to three million yards a month. It is expected to have a number of postwar uses.

PLASTIC SHEET. Flexible plastic sheet. Heinz E. Kallmann. USP 2 381 061, August 7, 1945. A flexible sheet consists of at least two types of visibly contrasting flexible filaments of glass or plastic compressed into a homogeneous sheet smooth on both faces and having a textile pattern composed of the visibly contrasting flexible filaments. In several claims, permanent crimping of the glass filaments and their fusion at points of interlacing are disclosed.

WINDOW SHADE. Coated glass fiber window shade. Charles S. Hyatt and Thomas J. Kerr (to Columbus Coated Fabrics Corp.). USP 2 381 542, August 7, 1945. Window-shade cloth comprises layers of glass-fiber webs bonded by a flexible adhesive containing as its film-forming constituent either nitrocellulose, ethyl cellulose, cellulose acetate, or cellulose acetate butyrate. If colored shades are desired, tinted glass or adhesive mixed with pigment may be used. The shades are said to be highly resistant to the action of sunlight, water, heat, and cold.

VI. FINISHING

FINISHING TEXTILES. Cuts and creases in textile finishing. "Technicus." *Textile Weekly 36,* 232, 234, 236, 238 (August 3, 1945). Cuts and creases in finished cottons, linens, and rayons—their causes and remedies—are discussed. To avoid cuts cottons should not be creased after treatment with thickening which dries stiff; and linen, and rayon crepes should not be processed folded. Rollers on processing equipment should be smooth and relatively soft. Crease-like effects in finished cloth can arise from excessive singeing at places where cloth was creased, tightening of fabrics on winches at any stage of washing or dyeing, careless crepeing or careless handling of creped clothes, and careless mangleing.

HELLWIG CO. The Hellwig Co.—a leader in dyeing and finishing progress. Anon. *Textile Age 9,* No. 8, 25-6, 28, 30, 32-4, 36, 38 (August 1945). Hellwig Dyeing Corp., Philadelphia, has been a leader for 75 years in the dyeing and finishing of silks and, later, rayons. The firm started in 1876 by dyeing skeins with aniline dyes and logwood. Rayon dyeing started in 1898. Tin-weighting of silks was begun in 1905. By the middle of the 1920's the first weighting and dyeing machines for silk piece goods were installed as the demand for skein dyed goods steadily decreased. The company was "in on the ground floor" in the finishing of nylon and the high-strength viscose rayons needed for the war; and its chemical and physical testing laboratories have studied the characteristics of nylon, Fortisan, Vinyon, Aralac, etc., to be ready for the postwar period. Photographs show the mill, the chief officials, and typical operations.

SILK NET. Preparation of silk net materials for finishing. Bleaching and dyeing methods—some practical points. Anon. *Silk & Rayon 19,* 781-2 (July 1945). Silk net reaches finishers in pieces 3-4 yd. wide and 20 yd. long. The pieces are inspected for holes and stains, which are remedied immediately, and then put in cotton-mesh bags for treatment. Degumming requires two treatments with boiling soap liquor. Bleaching to make white net is done in a wood vessel with dilute hydrogen peroxide brought to a pH of 9 with sodium silicate. Dyeing is done in hand-operated small stainless steel winch machines—power winches are too apt to tear the delicate net. Some of the degumming liquor is added to the slightly acid dye liquor to aid leveling.

VI, 1. Preparation

VI, 1c. Washing

CLEANING WOOLENS. Use of ammonia in cleansing woolens. Adam Aitchison. *Can. Textile J. 62,* No. 14, 47-8 (July 13, 1945). Ammonia helps loosen filth from wool after fulling and the ammonium soaps formed rinse out easily. Most dyes are not affected by it, but the goods containing it cannot be allowed to contact any metal.

VI, 1d. Drying and conditioning

DIELECTRIC HEATING. Dielectric heating in industry. L. M. Duryee, Connecticut Light & Power Co. *Elec. World 124,* No. 9, 84-7 (September 1, 1945). An article urging utilities to develop the market for dielectric heating gives the basic mathematics for designing oscillator circuits, and typical cost figures on this form of heat. A short discourse on the use of dielectric heat in the fabrication of plastics is included, as are also the dielectric constants and power factors of a number of common plastics and plastic fillers.

DRYING TEXTILES. Radiant heat in textile drying. Technical Staff, Rudel Machinery Co., Ltd., and Red-Ray Manufacturing Co. *Can. Textile J. 62,* No. 14, 36, 38 (July 13, 1945). Infrared gas burners, whose refractory surfaces reach temperatures of 2600°F., are very efficient in drying materials on tenter frames, steam cans, and slashers. They are also effective in singeing goods and in curing resin finishes. A burner 70 inches long and 5 inches wide will develop 350,000 BTU per hr.

REDMAN PATENTS. Creates trusteeship for new process. Anon. *Textile Age 9,* No. 8, 112 (August 1945). An agreement signed by Frank R. Redman and five trustees will permit the development of the Redman patents for finishing knitted fabrics. By this method fibers stretched during knitting are relaxed by treating the fabric with moisture at a high temperature and agitating it, and then drying it at a high temperature and calendering it. At the suggestion of the Philadelphia Quartermaster Depot, the Underwear Institute raised a fund of $75,000 to build a pilot machine. "Responsible" mills will be able to use the patents on the payment of a small royalty.

NOW INFRA-RED PLUS NEW ADVANCED AIRAY. Pulletin No. 145-A of the J. O. Ross Engineering Corp., New York, N. Y., 1945; 4 pp.; gratis.

VI, 3. Milling and fulling

MILLING. The milling process. What really happens. D. R. H. Williams. *Wool Record & Textile World 68,* 237, 239, 241, 243 (August 9, 1945). One of the principal objects of milling a cloth is to obtain cover which in the case of worsted cloth consists largely of loops made by individual fibers "which creep by means of their serrated edges". Even pressure, a temperature of 100°F., proper lubrication (obtained by leaving the correct amount of moisture in the cloth before soaping up and using soap of the correct strength), and proper "plasticity" of the fibers in the cloth are requisite to proper milling of wool. Surface friction and wrinkling have to be avoided. A new model milling machine is described.

VI, 6. Sizing and finishing

SILK NET. The processing of real silk net materials. Finishing varies according to ultimate

use. Anon. *Silk & Rayon 19,* 877, 883 (August 1945). Silk netting may have to be very soft, as for bridal veils, or very stiff, as for veils for hats, so that the finishing will depend on the use. In all cases, however, the damp net from the hydroextractor is pinned to side and end rails of a stretcher, whose side rails may be eighty or more yards in length. Finishes—degraded starch, starch, or starch plus urea-formaldehyde resin, depending on the stiffness desired—are applied to the stretched nets with long-handled brushes. As many as ten coats may be put on. Drying is accomplished by circulation of air heated by steam pipes to as high a temperature as the workers can stand. The dry net is folded on a light wooden frame from which it can be removed to be cut to desired lengths.

FINISHING COMPOSITION. Treatment of textile materials. Ira L. Griffin, Dave E. Truax, and Norman H. Nuttall (to Stein, Hall & Co., Inc.). USP 2 381 587, August 7, 1945. A permanent finish is given to textiles by: applying to them in the presence of water a water-dispersible film-forming binder and a fixing agent, together with a fluoride selected from the group consisting of antimony tri-fluoride and sodium silico fluoride; and then drying the material to a moisture content under 2%. The fixing agent is an antimony compound that reacts with the binder.

SMOOTHING COATINGS. Apparatus for smoothing thermoplastic coating materials. Arthur M. Wickwire, Jr. (to Interchemical Corp.). USP 2 381 942, August 14, 1945. Apparatus for smoothing a thermoplastic coating material applied on one surface of a traveling web comprises the combination of means for applying a high-temperature flame directly on the coated surface, means for smoothing the heated coated surface, and means for applying a second high-temperature flame upon the smoothed coated surface immediately after it leaves the smoothing means.

VII. COLOR

DYEING. Dyers and the study of dyeing. II. George Broun. *Textile Bull. 68,* No. 12, 32, 34 (August 15, 1945). Would-be-dyers without technical training can take correspondence courses, which they should supplement by performing simple laboratory tests to learn the action of textile chemicals and dyes on all the common fabrics. Then the beginner should familiarize himself with the effects of different chemicals and textile assistants, temperature and time of dyeing, and nature of the cloth used in the plant where he works. Sample experiments are outlined.

VII, 1. Bleaching

STRIPPING. Stripping cotton union cloth. Procedure with fabric containing rayon or jute. A. Ellis. *Textile Weekly 36,* 412, 414, 416, 418, 420 (August 31, 1945). Advice is given on the stripping of cotton-rayon and cotton-jute fabrics dyed with basic, vat, azo, Prussian blue, iron buff, manganese brown, catechu, and logwood dyes. In almost every case special precautions have to be taken to avoid tendering of the goods.

CHLORINATING BAST FIBERS. Apparatus for chlorinating bast fibers. Helmuth Korte, Wilhelm Weibel, and Johann Metzger (vested in the Alien Property Custodian). USP 2 382 726, August 14, 1945. Bast fibers of whatever origin are chlorinated in apparatus comprising a bleaching tank for impregnating the goods with chlorine-containing liquors, means for continuously transporting the goods through the tank, an inlet at the bottom for the chlorinating liquors, an outlet a substantial distance above the inlet for taking used liquors from the tank, a chlorinating column for producing supersaturated chlorine water that is provided with an inlet and an outlet, means for connecting the outlet of the chlorination column and the inlet of the tank and for connecting the outlet of the tank and the inlet of the chlorination column, valves in each of the connections to regulate the flow and liquor pressure in the column, and means located in the second connecting means for circulating the liquors from the tank outlet, under pressure, through the chlorination column and into the tank inlet to keep the chlorinating liquors near the surface of the tank below the saturation point.

VII, 2. Dyeing

DYEING. Experience in dyeing under wartime restrictions may prove to be valuable. L. M. Richardson. *Textile Bull. 68,* No. 12, 28 (August 15, 1945). As the number of fast-to-washing dyes available during the war decreased, some dyers took advantage of the chemical structure of certain inexpensive direct and developed colors to work out shades that cost considerably less than pre-war dyes. The first colors worked out were the browns, practically all of which have an amino- or a hydroxyl-group (which permits them to be diazotized and developed), permitting them to be coupled after diazotization with salts of fast colors. Exact directions are given for dyeing packages of cotton and spun rayon by such a procedure.

DIAZO SALTS. Stable diazo salt preparation William Henry von Glahn, William Leo Walsh, and Clemens Streck (to General Aniline & Film Corp.). USP 2 381 145, August 7, 1945. Diazo salt preparation for dye solutions and printing pastes are stabilized by the addition to them of an aliphatic mono- or poly-sulfonic acid containing not more than four carbon atoms or its water-soluble salts. Specific claim is made to the disodium salt of ethane disulfonic acid for stabilizing the double salt diazo-2, 5-chloroaniline-zinc chloride. The amounts of stabilizer shown in the examples vary from about 5 to 20 parts per 100 parts of diazo salt.

DYEING. Oxidation of vat and sulphur dyes. George P. Vincent and Archie L. Dubeau (to The Mathieson Alkali Works, Inc.). USP 2 382 188,

August 14, 1945. Cellulosic textile materials are dyed with vat or sulfur dyes, after which they are oxidized with an aqueous solution of sodium chlorite and an acid having a pH not less than about 3 for a long enough time to effect the desired oxidation. Exact conditions are disclosed in nine examples given in the specification.

VII, 2d. Printing

PRINTING COMPOSITION. Textile printing composition. John R. Abrams (to Interchemical Corp.). USP 2 381 868, August 14, 1945. A composition for printing textiles comprises a pigment dispersed in a lacquer whose binder consists of 1 to 4 parts by weight of a carbamide-formaldehyde resin, soluble in a mixture of butanol and xylene, to 1 part by weight of methyl abietate.

PRINTING PASTE. Textile printing pastes and textiles produced therefrom. Norman S. Cassel (to Interchemical Corp.). USP 2 381 878, August 14, 1945. A textile printing paste comprises a dispersion of color in a vehicle consisting of a water-insoluble cellulose ether, soluble in carbon tetrachloride, and a solvent-soluble urea-formaldehyde resin. Both are dissolved in a common solvent. The ratio of urea resin to cellulose ether is between 1 to 20 and 1 to 1. After application to fabrics and conversion to its insoluble form, the paste is completely indifferent to carbon tetrachloride and is resistant to laundering.

PRINTING FABRICS. Process for producing pattern effects on fabrics. Georges Heberlein and Ernst Weiss (to Heberlein Patent Corp.). USP 2 382 416, August 14, 1945. Patterns are produced on cellulosic fabric by printing it in different registered patterns with two agents, treating the printed fabric with parchmentizing agents, washing out one of the agents, and shrinking the fabric. One of the agents used for printing is a wash-resistant, water-insoluble reserve, permeable to parchmentizing agents; and the other is a water-soluble reserve permeable to parchmentizing agents. Ordinary gum resists are used as the water-soluble agents. Compositions of a number of the other sort of reserves are disclosed in the specification, which also gives exact conditions for parchmentizing and shrinking mercerized cotton and mercerized mousseline.

PRINTING PASTE. Textile printing paste. Malcolm Crenshaw Moore (to Hercules Powder Co.). Can. P. 429 691, August 28, 1945. A textile-printing paste comprises an inert, water-insoluble pigment dispersed in an aqueous oil-in-water type of emulsion. The emulsion consists of a solution of ethyl cellulose in a volatile, water-immiscible, organic solvent, and contains about 2 to 20% solids. Enough pigment is added to give the desired color, but the total solids content of the printing paste is not over 45% by weight.

VIII. PROOFING

FUNGICIDE. Fungicide compound. Anon. *Chem. Eng. News 23,* 1456 (August 25, 1945). Pyridylmercuric stearate, manufactured by Mallinckrodt, is a fungicide and bactericide with marked water-repellent properties. It has been approved for use in fungus-resistant paints for field-application to cotton duck and webbing. Textiles can be mildew-proofed by passing the fabric through a solution of this compound in stoddard solvent containing a small amount of Cellosolve. Cordage manufacturers are interested in it. It melts at 120-130°C.

PLASTIC COATING. A waterproof, fungus-resistant, non-inflammable plastics coating material. Anon. *Plastics 3,* No. 3, 110 (September 1945). Firefoil is a waterproof, fungus-resistant, non-inflammable plastic for fabrics. It can be applied by dipping, spraying, and spreading equipment, such as roller-coaters or brushes. Firefoil-coated samples showed no evidence of deterioration after exposure at 110°F. in exhaustive weathering tests for as long as 800 hours. The plastic is made by the Eronel Industries, Los Angeles.

ANTI-STATIC TREATMENT. Antistatic treatment of vinyl resin textiles. Benjamin G. Wilkes and Walter A. Denison (to Carbide and Carbon Chemicals Corp.). USP 2 381 020, August 7, 1945. The tendency of yarns; filaments; fibers; woven, knitted, and felted fabrics; and other articles composed of, or containing, a vinyl resin, to accumulate static electricity is reduced by applying to them first a composition containing a wetting agent and a water-dispersible polyethylene imine, and then an aliphatic aldehyde. The polyethylene imine has a molecular weight of at least 300, and the aldehyde has not more than six carbon atoms in the molecule. The vinyl resin is formed by "the polymerization of at least one vinyl compound including a vinyl halide."

TREATING COMPOSITION. Formation of fire-retardant and water-repellent finishes. Alton A. Cook and Ernest B. Whitworth (to Arkansas Co., Inc.). USP 2 381 487, August 7, 1945. A stable bath for rendering fibrous material fire-retardant and water-repellent, includes a water solution of an alkali borate, a water-soluble aliphatic carboxylic acid having at least one hydroxyl group, and an emulsion of a water-repellent composition.

TREATING TEXTILES. Treatment of textiles. Carroll A. Hochwalt (to Monsanto Chemical Co.). USP 2 381 852, August 7, 1945. Textile fibers are made water-repellent and rot-resistant by treating them with a monoalkylene succiniate, the alkylene group of which contains 5 to 16 carbon atoms, and then treating them with a soluble cupric salt.

NON-FELTING WOOL. Process for rendering wool nonfelting. Frederick A. Hessel and John B. Rust (to Ellis-Foster Co., Inc.). USP 2 382 632, August 14, 1945. Non-felting wool is produced by heating the wool in an aqueous solution containing 1 to 10% of a basic nitrogen compound

at 50 to 90°C. for 15 to 60 minutes, and then rinsing and drying it. Suitable basic nitrogen compounds are: primary and secondary amines, mild quaternary ammonium bases which do not dissolve wool, and alkali salts of amino acids. Guanidine, ethylenediamine alone and plus ammonium carbonate, and isopropyl amine plus ammonium carbonate are claimed specifically. A table in the specification gives the pH, temperature, period of treatment, color, feel, and the number of standard washings required to produce felting of the wool treated with 57 compounds.

VIII, 1. Waterproofing; weatherproofing; moistureproofing

WATER-REPELLENCY. Water-repellent fabrics. Some modern developments. Anon. *Textile Weekly 36,* 276, 278, 280 (August 10, 1945). Patnode's discovery in 1943 of the process of treating cloth and paper with methyl chlor silanes, and the development in 1944 of a wax-aluminum emulsion and of "Zelan" are the chief "modern developments" in water-repellency discussed here. It has been discovered that resilient fabric, such as flannel, should be used as backing for water-repellent cloth. The author considers the familiar Du Pont showerhead testing apparatus to have greatly aided research in the field.

EMULSIONS. Aqueous emulsions of cellulose acetate. Oskar Huppert. USP 2 382 636, August 14, 1945. Stable, dilute aqueous emulsions of cellulose acetate or mixed esters of cellulose acetate are prepared by dissolving the cellulose ester in isophorone; emulsifying the solution with an aqueous solution of gelatine containing maleic anhydride and sulfonated castor oil; and diluting the emulsion so obtained with water. Use of the emulsions in making fabrics *water-repellent* is disclosed in the specification, but not claimed. Examples in the specification give exact concentrations of reagents and conditions for preparation of the emulsions, as well as the conditions for applying them to rayon, viscose-staple, and soya bean fibers; felt hat shapes; viscose-yarn stockings; and rayon-piece goods.

WATERPROOFING PROCESS. Fabric waterproofing process. Alexandrine Paquette. Can. P. 429 230, August 7, 1945. Cloth is waterproofed by treating it with a composition containing about eight parts of linseed oil, two to three parts of enamel, two parts of turpentine, and two parts of vinegar. The mixture should be applied at 70-80°F.

VIII, 3. Proofing against microbiological attack

MILDEWPROOF COTTON. Beating rot & mildew. Anon. *Textile Bull. 69,* No. 1, 21 (September 1, 1945). A partially acetylated cotton, which is mildewproof, was developed in the Southern Regional Research Laboratory, New Orleans. It can be buried for 6 to 12 months without appreciable change in soil that disintegrates cotton in a week. Besides being suitable for tropical clothing, tents and awnings, and fish nets, acetylated cotton can be used in food bags, which is not true of fabrics treated with poisonous preservatives. The material has the appearance and strength of ordinary cotton.

FUNGUSPROOFING. Method of fungusproofing textiles. Paul George Benignus (to Monsanto Chemical Co., Inc.). USP 2 381 863, August 14, 1945. Textiles are rendered resistant to attack by molds by impregnating them with an aqueous solution of copper salts of 8-hydroxyquinoline. The salts are solubilized at a pH below 2.7. The pH of the impregnated textile is raised to a pH above 2.7, and the textile washed and treated to remove water-soluble substances.

VIII, 6. Shrinkproofing

SHRINKPROOFING WOOL. Alkaline antishrink treatment for wool. Anon. *Textile Age 9,* No. 8, 114-5 (August 1945); *Textile World 95,* No. 8, 138 (August 1945). T. B. Lee Co., Inc., the U. S. subsidiary of Tootal Broadhurst Lee Co., Ltd., announced that any knit wool or light-weight wool garments treated by the new process will keep their sizes as long as they are useful. Air-dry wool is treated with a dilute solution of caustic soda in a mixture of butyl alcohol and white spirit at room temperature for an hour. The processing liquor is removed, and the wool is acidified and scoured. Treated socks shrank 2% in the leg and 3% in the foot compared with 20 and 11%, respectively, for untreated socks; treated heavy knit wool underwear shrank 8% in length and none in width, compared with 26 and 14%, respectively, for untreated underwear.

VIII, 7. Proofing against chemicals, solvents, perspiration, etc.

GAS-FADING. Gas-fading of acetate can be minimized. N. D. Lobar. *Textile World 95,* No. 8, 94-5, 188, 190, 192 (August 1945). Gas-fading of dyed acetate rayon can be controlled by the selection of dyes that are little affected by gas-fading, if selection is possible, and by the use of protective agents. Resins, wax emulsions, certain organic and inorganic chemicals mildly reducing in their action, tannic acid, and foramadine derivatives are the chief protective agents. Choice of dye and finish depend chiefly on the uses to which the fabric will be put and the way in which it will be cleaned.

IX. TESTING AND ANALYSIS; SPECIFICATIONS

IX, 1. Physical and Mechanical

GAS FLOW. Mass transfer in the flow of gases through granular solids extended to low modified Reynolds numbers. Charles R. Wilke and O. A. Hougen, University of Wisconsin. *Trans. Am. Inst. Chem. Engrs. 41,* 445-51 (August 25, 1945).

"Experimental data on the transfer of water vapor from air flowing through granular solids were obtained in the range of modified Reynolds numbers from 50 to 250. Seven different particle sizes were used. Special precautions were required to obtain reliable surface temperatures of the solid at low velocities of air flow." The results are expressed in the form of an equation.

RADIATION STANDARDS. Maintenance of radiation standards. Anon. *Tech. News Bull. Nat'l Bur. Standards* No. 329, 69-70 (September 1945). During July the 1,000-watt monoplane, tungsten-filament lamp maintained by the National Bureau of Standards for use in calibrating high-powered infrared lamps used in industry for drying was recalibrated "and placed on a more reliable basis". The other standards of radiation maintained by the Bureau are listed.

TENSILE TESTING. Electronic control for tensile testing at constant rate of load. R. J. Demartini, General Electric Co. *Textile Research J. 15,* 274-80 (August 1945). An electronic circuit for controlling the speed of the motor for a pendulum-type tensile-strength tester eliminates shock loading at the beginning of the cycle and applies the load at a constant rate. Pictures, diagrams, and several typical time-load curves obtained on nylon braid and on zipper tape illustrate the equipment and results. This electronic control device is claimed to minimize variations due to "inaccuracies of the operator" and sample-to-sample differences in stretch characteristic.

TESTING EQUIPMENT. Design of devices used in the study of stress-strain-time properties. D. R. Morey, Eastman Kodak Co. *Textile Research J. 15,* 267-73 (August 1945). Equipment was devised for applying the load to a fiber or yarn being subjected to stress-strain tests in such a manner that the stress is increased at a constant rate as the cross-section diminishes during extension. This, and equipment for measuring extension as a function of time in which the specimen is loaded so as to be under constant stress rather than under a constant total load, are described with the aid of diagrams and photographs.

TIRE-CORD TESTER. Goodrich develops new tire cord tester. Anon. *Textile Bull. 68,* No. 12, 56 (August 15, 1945). A new tension vibrator for testing the fatigue strength of tire cord was invented by E. T. Lessig of the B. F. Goodrich Co., Akron. The material under test is suspended under static load and the upper grips are placed in vertical oscillation so rapid that the lower weights cannot respond and so remain practically motionless. Conditions of testing may be altered through a wide range of vibration rates, static loads, lengths of material being tested, and test temperature. The tester can be used for other products. It is manufactured by the Ferry Machine Co., Kent, Ohio.

ULTRAMICROSCOPY. Microscopic studies of lyogels. Ultra-illumination by incident light. Ernst A. Hauser, Massachusetts Institute of Technology, and D. L. le Beau, Midwest Rubber Reclaiming Co. *Ind. Eng. Chem. 37,* 786-9 (August 1945). A new technique for the microscopic examination of lyogels is described. The gel is dissolved in an appropriate solvent, the solution is spread on a nonmiscible liquid, a small piece of very fine wire is drawn up through the solution, and the coated wire is placed for observation under an Ultrapak microscope. In this instrument the indirect light producing the dark field is supplied from above the specimen. The optical system of the microscope and typical photographs, chiefly of rubber gels, are shown. Specimens can be subjected to a variety of conditions and manipulations impossible either on the standard ultramicroscope or the electron microscope.

IX, 1b. Yarns

REGULARITY TESTERS. Description and use of (1) the photographic yarn regularity tester, and (2) the photographic sliver and roving regularity tester. S. L. Anderson, B. Cavaney, G. A. R. Foster, and J. Gregory, British Cotton Industry Research Association. *Shirley Institute Memoirs 19,* 147-52 (June 1945). The regularity of yarn can be tested by two instruments described in detail. One, a photographic yarn-regularity tester, measures the thickness of yarn compressed between a pair of steel shoes. The other, the photographic sliver- and roving-regularity tester, measures the thickness of a yarn after it has been squeezed into a rectangular groove in the rim of a slowly rotating wheel. The possible sources of error in the latter are discussed.

REGULARITY TESTERS. The measurement of the weight variations in cotton rovings and yarns. B. Cavaney, G. A. R. Foster, and J. Gregory, British Cotton Research Association. *Shirley Institute Memoirs 19,* 153-68 (June 1945). The regularity of a yarn or roving is expressed best in terms of the standard deviation of the weights of a number of short specimens of equal length, but the weighing of a sufficient number of specimens to ensure accuracy is tedious. It is shown that thickness testers can be adjusted to give a high degree of correlation between the thickness and weight per unit length. The exact relation between thickness and weight can be determined on a comparatively small number of specimens, and the standard deviation of thickness then can be converted to standard deviation of weight. Determination of variations in thickness and calculation of the standard deviation of thickness can be carried out automatically.

REGULARITY TESTER. An automatic sliver and roving regularity tester and an automatic yarn regularity tester. S. L. Anderson, B. Cavaney, G. A. R. Foster, and J. R. Wormersley, British Cotton

Industry Research Association. *Shirley Institute Memoirs 19,* 183-96 (June 1945). Automatic equipment for testing the regularity of slivers and rovings, and of yarns was developed from the two testing instruments described in *Ibid.,* 147-52 (1945). Numerous diagrams illustrate the description of the instruments proper, the calculating mechanism, and the method of testing. Calibration and accuracy are discussed.

IX, 1c. Fabrics; foils; films

TESTING INSTRUMENT. Instrument for determining airworthiness of fabrics. Anon. *Tech. News Bull. Nat'l Bur. Standards* No. 329, 67-8 (September 1945). An instrument for testing airworthiness of doped fabric coverings for airplanes operates on the same principle as the automatic center punch. The impact energy required to drive the plunger through cloth coated with good or semibrittle dope at 73°F. correlates well with the breaking strength of the doped cloth. Fabrics have been tested over the temperature range −40° to +160°. The instrument was developed by the Civil Aeronautics Administration, calibrated and refined by the National Bureau of Standards, and now is in the process of being tested by interested organizations.

IX, 1d. Textile chemicals and dyes

COTTON-WARP SIZING. Some studies on cotton warp sizing. Paul Gulledge. *Cotton (U. S.) 109,* No. 8, 95-8 (August 1945). Starches and sizing compounds for use on cotton warps can be evaluated much more fairly by testing them under comparable conditions on full-scale weaving equipment than by laboratory abrasion and tensile tests. The method used by one mill (not named) in making full-scale tests on two starches and four sizing compounds (also not named) is described and the data obtained are tabulated and discussed. It is mentioned that reduction in the steam pressure on the slasher cylinders from twelve to nine pounds decreases the slasher speed only two to three yards a minute.

IX, 2. Chemical

CELLULOSE ANALYSIS. The determination of alpha-cellulose. Hilding Tydén. Ing. Vetenskaps Akad. Handl. No. 175, 1-83 (1943). Digest in *Bull. Institute Paper Chem. (Library Notes) 15,* 449-50 (August 1945). "This monograph, which gives extensive new experimental data, is divided into eight parts: (1) a general discussion of the micellar and morphological structure of the cellulose fiber, (2) the action of sodium hydroxide on cellulose, (3) the state of cellulose in solution, (4) the determination of α-cellulose, (5) the precipitation of β-cellulose, (6) the dependence of the nonprecipitable cellulose content of alkaline solutions on the technique used in alkaline treatment, (7) the relationship of the various cellulose fractions obtained on treating pulps with alkali, (8) conclusions and 206 literature references. The first three sections are largely critical literature surveys . . ."

IX, 2c. Fabrics; foils; films

NITROGEN ANALYSES. Determination of nitrogen in textiles. Solomon Frankfurt, Pacific Mills Research Laboratory. *Textile Research J. 15,* 281-3 (August 1945). Copper selenite is recommended as a catalyst for the digestion of textiles in sulfuric acid during their analysis for nitrogen by the Kjeldahl method. Directions are given for the entire procedure, the apparatus is diagrammed, and results for several samples are tabulated. The analysis can be completed in 30 minutes, distillation is smooth, and the results are satisfactory even though the nitrogen content is low and not evenly distributed.

X. WASTE RECOVERY AND UTILIZATION; WASTE PREVENTION

X, 3. Mill affluents and waste disposal; stream pollution

INDUSTRIAL WASTE. Industrial waste—an important factor in process planning. Anon. *Chem. & Met. Eng. 52,* No. 8, 117-24 (August 1945). "Waste disposal must be considered an integral factor of industrial planning . . . [It] should be given the same study and research accorded actual production methods . . . The concept that utilization removes all objectionable waste is erroneous . . . Industry is becoming increasingly aware of its responsibility along these lines . . . Industry-wide organizations which have been interested in waste-disposal work for their individual industries include the Textile Foundation . . ." These statements are made in an article analyzing the current methods of regulating stream pollution, bills for federal regulation now before Congress, the agencies sponsoring research on these problems, and the types of waste from different industries (including the textile industry). A large section of the text and all of the illustrations are devoted to methods of separating wastes or destroying them by the action of bacteria.

LIQUID CLARIFIER. Means and method for supplying clarified liquid. Allen Latham, Jr. (to Arthur D. Little, Inc.). USP 2 381 760, August 7, 1945. Liquid is clarified by apparatus comprising: an *ejector* that includes a jet and a pump for forcing liquid through the jet; *mixing means* for commingling contaminated liquid with liquid forced through the jet; a liquid-solid *separator; directing means* for taking the commingled liquid to the liquid-solid separator; *withdrawing means* for simultaneously removing from the separator effluent liquid containing the contaminating solids and clarified liquid; a *reservoir; directing means* for getting the clarified liquid from the reservoir to the

pump to be forced through the jet; and *directing means* for providing from the reservoir a supply of clarified liquid.

CLARIFYING LIQUIDS. Apparatus for effecting clarification of turbulent liquid by flocculation. Ralph B. Carter, Jr. (to Ralph B. Carter Co., Inc.). USP 2 382 605, August 14, 1945. A flocculating mechanism having for the material to be treated a container with an inlet and an outlet, and a shaft placed longitudinally with respect to flow of material from the inlet to the outlet, has combined with it a series of plate controllers in planes crossing the shaft and rotatable with it. The plate controllers have aligned peripheral portions spaced from the walls of the container, and misaligned cutouts to form passages for the flow of the material. The liquid being treated flows over the peripheral portion of one controller to the shaft portion of the cutout of the next adjacent controller, and from there to the peripheral portion of the next controller, etc., to make its passage "partake of a continuous unbroken stream of spiral formation".

LIQUID PURIFICATION. Earl M. Kelly and Arthur M. Kivari (to The Dorr Co.). Can. P. 429 411, August 14, 1945. Impure liquids are clarified in a tank holding an ever-changing body of liquid and providing a gas-holding space over the liquid. Means are provided for: *controlling the level of liquid* in the tank; *applying suction* equal to more than 6 inches of mercury to the gas-holding space; continually *projecting* close to the liquid level gas-bearing impure *feed liquid* made up of liquid having an oxygen-demand and suspended constituents, including particles inhibitory to aerobic bacteria—the liquid is introduced within reach of the suction and the suction sucks up into the scum the suspended particles; continually *removing clarified,* oxygen-demanding *liquor;* and *removing* the *scum.* There are also provided: an aerobic biologic trickling filter-bed, a sedimentation tank, piping to transfer filter-bed discharge to the sedimentation tank and sedimentation-tank discharge to the filter bed, means for supplying the clarified liquor to the filter-bed, and means for removing the end products.

XI. CLEANSING

XI, 1. Laundering

WASHING MACHINE. Domestic appliance. Donald K. Ferris (to General Motors Corp.). USP 2 381 894, August 14, 1945. A washing machine said to be responsive to the weight of material put in it consists of a combination of: a resiliently-supported rotatable basket; means for agitating the basket; a valve for controlling the flow of liquid from a source to the basket; means responsive to the downward movement of the basket under the weight of liquid added to the basket to close the valve when the basket has been filled to a predetermined amount; and a timer to control the sequence of operations of the machine, *i. e.,* to prevent rotation and agitation of the basket during the filling period, to keep the valve open during the filling period, to keep the valve closed after the filling period, and to start agitation and rotation after the filling period.

WRINGER. Horace H. Beasley. USP 2 383 388, August 14, 1945. A wringer comprises a U-shaped, rigid frame; a first and second wringer roll; two first cross arms, positioned and shaped rotatably to support between them the first wringer roll, that are rigidly secured to one of the legs of the frame; and two second cross arms, positioned and shaped rotatably to support between them the second wringer roll in cooperating position with the first wringer roll, and pivotally hinged against a spring in rigidly spaced relation to the other leg of the frame for resilient cooperation between the first and second wringer rolls.

WASHING MACHINE. Laundry machine. James B. Kirby (to The Apex Electrical Manufacturing Co., Inc.). USP 2 381 545, August 7, 1945. A timer for a washing machine is claimed.

RINSE WRINGER. Albert Schellenberg. Can. P. 429 644, August 28, 1945. In a rinse wringer there are a rinse chamber; a pair of power-driven, intake-wringer rolls to feed garments into the rinsing chamber; a pair of power-driven rolls to convey garments out of the chamber; spray means adjoining the inner sides of the pairs of rolls; a smooth, concave rinse board bridging the rinse chamber between the rolls; and an impeller roller to submerge the garments, and convey them over the rinse board and through the chamber into the succeeding pair of rolls. One claim discloses an impeller roll circumferentially corrugated with longitudinal flutings.

XII. HAZARDS; SAFETY PRECAUTIONS

INDUSTRIAL NURSE. The industrial nurse sells health and safety. Ethel P. Mogg, R. N. *Textile World 95,* No. 8, 102-3 (August 1945). The industrial "nurse [is] invaluable in teaching first aid, safety, and healthful living to employees", according to an article which quotes one plant employing 500 people as having saved $12,000 a year by starting a health and safety program. In the plant where the author works, "the nurse . . . personally interviews each new employee . . . to advise him of proper health and safety conduct . . . [and] as to the physical demands made by the new job and how he can best maintain his health for meeting those demands. The nurse can also advise him of the occupational hazards of the job . . ."

VISION TESTS. Visual efficiency improved at Magnet Mills. G. Luther Weibel, Magnet Mills, Inc. *Textile World 95,* No. 8, 125, 127 (August

1945). The eyesight of employees in hosiery mills working at such operations as sewing, paring, looping, and matching must be keen at close distances. Bausch & Lomb's Ortho-Rater is being used by Magnet Mills, Inc., Clinton, Tenn., to test present employees once a year and all applicants for work to determine what sort of jobs their vision fits them for. A correlation was found between proficiency and good eyesight, and absenteeism and poor eyesight. The Ortho-Tester is not a clinical instrument. People with defective vision are sent to professional eye men for prescription of glasses.

XII, 1. Fire

FIRE PREVENTION. Fire safety at Bibb mills. R. F. Dyer, Safety Research Institute. *Textile Age 9,* No. 8, 56, 58, 60-1 (August 1945). Bibb Manufacturing Co., Macon, Ga., prevents and fights fires by: (a) educating its employees in the importance of "good housekeeping", careful operation of machinery, and locations and operation of fire extinguishers; (b) taking away strike-anywhere matches and lighters at the gate, and limiting smoking to designated areas; (c) training special fire brigades; (d) holding regular inspections of all fire-fighting apparatus; and (e) drilling watchmen. The "simple, man-to-man language" used in educating the workers is illustrated by extensive quotations from the company rule-book, *Safety Sense.*

FIRE HAZARDS. Fire hazards in brushed rayon garments. Forum, Dominion Fire Prevention Association, Quebec City, May 16, 1945. *Can. Textile J. 62,* No. 14, 21-2, 40 (July 13, 1945). Abstracts of papers by C. W. Caskey, Deputy Fire Marshal of Ontario; B. Taylor, Courtaulds (Canada), Ltd.; P. Bugbee, National Fire Protection Association, Boston; and C. W. Palmer, Canadian Celanese, Ltd. All are agreed that brushed rayons constitute a fire hazard and that fireproofing is useless for garments. The rayon producers seem to think that the situation can be handled by labeling garments inflammable. Legislation is considered inadvisable until adequate testing procedures have been developed.

XII, 2. Accidents

ACCIDENT PREVENTION. Employees' responsibility for accident prevention. C. G. Cameron, Ontario Workmen's Compensation Board. *Can. Textile J. 62,* No. 19, 48 (September 21, 1945). An abstract of an address before the Textile and Allied Industries Association, and the Industrial Accident Prevention Associations, Toronto. Management should put the responsibility of a safety program on employees. The employees should discuss safety with their foremen, learn first aid, and, through the Industrial Accident Prevention Associations, loan to small companies the services of a safety engineer and a person to organize a safety program.

XII, 3. Occupational poisoning and diseases

CARBON-DISULFIDE POISONING. Carbon disulphide poisoning symptoms and remedies. Anon. *Silk & Rayon 19,* 788 (July 1945). Carbon disulfide, used in the rayon industry, poisons some workers. Young people, alcoholics, heavy smokers, and neuropathics are especially susceptible. F. J. Braceland, Chicago, and F. H. Lewey, Philadelphia, describe the symptoms of chronic poisoning as nervousness, insomnia, nightmares, and amnesia. Recovery takes two to six months. A diet rich in vitamin B helps. Rodenacker, Berlin, observed acute mental disturbances following three months' exposure to 0.5 to 2 mg. per liter of air, and chemical changes in the blood, paralysis of the nerves of the legs, disturbed vision, and stomach colic after exposure to more than 0.2 mg. per 1. Another German study places concentrations for chronic poisoning at about 0.15 mg., for sub-acute poisoning about 1.5 mg., and for acute poisoning 6.4-10 mg. per liter. Adequate ventilation and monthly medical examinations are suggested as remedies.

MULE-SPINNERS' CANCER. Preventing mule-spinners' cancer. Eliminating manual wiping-down on mules. Report of Sub-Committee "D" to the Ministry of Labour. Anon. *Textile Weekly 36,* 398, 400 (August 31, 1945); 450, 452 (September 7, 1945). To prevent mule-spinners' cancer, a subcommittee, whose composition is shown on p. 452, recommended to the British Ministry of Labour that: spindles be oiled with lubricants containing no carcinogenic compounds, the method of oiling to be changed radically to prevent oil from being thrown off on the clothing of operators, and the mules be wiped down by mechanical devices designed to be safe in operation. It is stated that there is no lubricant now available that contains no carcinogenic compounds. A mineral oil for use until a safe animal or vegetable oil is developed is specified.

XIII. TEXTILE MILLS

COST ANALYSIS. Process economic analysis aided by new graphical method. M. M. Reynolds, University of Colorado. *Chem. & Met. Eng. 52,* No. 8, 104-6 (August 1945). A graphical method of economic analysis employs a little-known geometric device by which addition and subtraction are accomplished with triangular charts. The main feature consists in plotting two variables against each other on an equilateral triangle to give a third or adjusted variable. Several such variables can be paired and combined, and the resulting adjusted variables also combined to produce eventually a single variable. The single variable can be plotted against the percentage production rate of the plant (plant factor) to give the requisite sales price. The method is illustrated by several examples, in one of which five variables (cost of raw material,

sales prices of by-products, and cost of the finished product) are handled.

DIRECTORY. Linens & Domestics Directory Number 30, No. 5A (August 31, 1945). The Directory Number of *Linens & Domestics* contains a Master listing of manufacturers pp. 87ff; a Classified directory of manufacturers, pp. 107ff; and a Trade name directory, pp. 144ff.

FOREMEN. Building better foremen. Wayne Varner. *Cotton (U. S.) 109,* No. 8, 99-101 (August 1945). Companies desiring a smooth-working supervisory force must: (a) define clearly supervisory authority and responsibilities; (b) give foremen adequate training in their supervisory duties, including company policies, human relations, and safety; (c) furnish proper physical equipment for the foremen; and (d) establish adequate grievance channels and procedures for the foremen. These points are discussed.

LABOR RELATIONS. Management rights and collective bargaining. Douglas McGregor, Massachusetts Institute of Technology. *Mech. Eng. 67,* 610-11 (September 1945). This is a long review of the book, "Management at the Bargaining Table", by L. H. Hill and C. R. Hook, McGraw-Hill Book Co., Inc., New York, 1945; 300 pp. The reviewer states that, "Until recently there have been few attempts to consider the union agreement from a functional point of view. This book fills a real need because it attempts to do exactly that . . . Consequently, although the book is less useful than a handbook to those who want to look up a particular type of clause, it is far more useful to those who are interested in the union agreement as a whole. Even the member of management who is experienced in labor negotiations will find this book worth reading."

LABOR RELATIONS. Government's policy for cotton. Labour in cotton spinning. Anon. *Textile Weekly 36,* 300 & 302, 304-5, respectively (August 17, 1945). A conference at Manchester, August 11, between representatives of the British cotton industry and the new government revealed that the government is "determined that the cotton industry shall once more provide the goods required for home consumption and export on the one hand, and good wages and conditions for operatives on the other". It also realizes that the industry "must yield a reasonable return on the capital actually employed". Various trade unions of cotton spinners demanded attractive wages, good working conditions, and regular and stable employment; and suggested the establishment of a Commission to supervise the whole industry.

LABOR RELATIONS. Labor-management committee unifies wool combing plant. Howard S. Knowlton, *Textile World. Textile World 95,* No. 8, 96-8 (August 1945). A labor-management committee, from which all legitimate union business

and the proper functions of management are excluded, helps the South Barre plant of the Barre Wool Combing Co., Ltd., with any problem not covered by the established collective bargaining procedure. The committee has concerned itself with recreation, safety engineering, letters to servicemen, transportation, absenteeism, suggestions for improving the operation of the plant, a nursery school for the children of working mothers, etc.

LABOR RELATIONS. Hosiery mill studies management problems. Earle Mauldin, *Textile World. Textile World 95,* No. 8, 106-7 (August 1945). A southern knitting mill, whose name is not given, tries to determine the intellectual and technical abilities of each new employee; makes sure he is physically fit for the work he is to do; puts him under a trainer having experience, tact, and patience; gives him a chance at other work if he does not get along in the first job; and surveys the workers' feelings about his work, immediate boss, and the company by means of questionnaires which are not signed, and which are acted on.

MANAGEMENT. Current developments in plant management. Walter von Pechmann. *Ind. Eng. Chem. 37,* 77-8 (July 1945). Methods of intraplant communication discussed here are: confirmation in writing of conclusions reached in oral conferences; letters; staff meetings; and meetings by telephone.

FUEL COSTS. Climate and cotton mill coal consumption. Anon. *Am. Wool Cotton Reptr. 59,* No. 35, 13-14, 29 (August 30, 1945). Figures from three northern and four southern mills on the amount of steam required for spinning and weaving, and for heating the plants indicate that the annual fuel costs of the northern mills are about 40% higher because of the cooler climate. The figures cited are not strictly comparable since *fuel per spindle* is reported in some cases and *per pound of goods made* in others.

INDUSTRIAL FEEDING. Washington aids program for in-plant feeding. Gladys Montgomery, *Textile World. Textile World 95,* No. 8, 133, 176, 178, 180 (August 1945). The U. S. Department of Agriculture will aid any industry wishing to make arrangements for feeding its employees in its plants by surveying the plant and making recommendations. This service is free. Approximately 100 southern cotton mills have received it last year. Production increases and absenteeism decreases as the workers are adequately nourished. Dr. R. F. Abercrombie, Director of the Georgia Department of Public Health, is quoted as saying, "Improvement of opportunity for good nutrition is probably the greatest single contribution that can be made to the upgrading of the textile worker . . ."

QUALITY CONTROL. Quality control by statistical methods. A. E. Dennis, U. S. Army, Quartermaster Corps. *Rayon Textile Monthly 26,*

397-9 (August 1945). The control of the quality of a manufactured product is the responsibility of management, which should appoint a technician with a knowledge of statistics, preferably not an outsider, to head the quality control department. This department should have the duties of examining all raw materials; indicating when training of operators is needed; supervising maintenance, adjustment, and replacement of machinery; discovering and stopping the production of bad work; and determining when processes need improvement.

WOOLEN MACHINERY. New machinery. Anon. *Am. Wool Cotton Reptr. 59,* No. 36, 1, 27, 29 (September 6, 1945). Histories of several northern woolen mills are sketched to cinch the point that, "There are a lot of . . . old, worn-out woolen mills, probably the large majority of them come within that category. If anything can prevent a transfer of the woolen industry from the East to the South, it can only be new equipment and able management."

XIII, 2. Machinery

EQUIPMENT. Use of metals in textile machinery and equipment. Henry Miedendorp, Jr. *Rayon Textile Monthly 26,* 401-2 (August 1945). Cast iron, cold-drawn steel, and stainless steel are the chief metals used in fabricating textile machinery. Stainless steel is used chiefly in dyeing at present, but can be expected to be used in silk-type warpers and "in certain parts on numerous other machines", for it is cleaned easily. Magnesium probably will have little use in textile machinery, because it is only 25% as strong as cold-drawn steel.

XIII, 3. Power

XIII, 3b. Electric

ELECTRIC POWER. Switchgear for main power and lighting. Points for and against various types of installation. Anon. *Silk & Rayon 19,* 776-7, 779 (July 1945). The advantages and disadvantages of oil, fuze, and air-break circuit breakers for use on power and lighting circuits are discussed with the aid of diagrams showing the variation of the current with time in a short-circuited conductor, the time required for a 60 amp. fuze and an overload trip coil to operate, and the construction of a cartridge fuze fitted with a striker pin. Types of switchboards available and isolating switches for them are also treated.

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4 TYPES OF G-E RANGE-DRIVES. Bulletin GEA-2750 of the General Electric Co., Schenectady, N. Y., March 1941; 16 pp.; gratis. The four range-drives made by the General Electric Co. for all tandem operations in cloth-finishing plants (the constant voltage dc, the adjustable-voltage dc, the adjustable-speed ac, and the turbine-electric ac or dc) are described and illustrated.

XIII, 4. Materials handling and transport

CENTRIFUGAL PUMPS. Centrifugal pumps for acids and corrosive liquids. Anon. *Textile Weekly 36,* 230 (August 3, 1945). Meldrums, Ltd., are making centrifugal pumps for handling corrosive liquids from high grade silicon iron. The latest designs have the volute and delivery branch in one casting, a separate cover carrying the suction branch to the delivery branch to allow the whirlpool chamber and the volute to be more uniform in shape, the pump casing and impeller ground with great accuracy, glands of the compound type, and a direct-coupled electric motor drive on the same base-plate as the glands under suction. The pumps are available in a range of sizes, which are listed.

REDUCING COSTS. Reducing cloth room costs at Pacolet Mfg. Co. Anon. *Cotton (U. S.) 109,* No. 8, 104-6 (August 1945). The costs of operating the cloth room were reduced by the Pacolet Manufacturing Co. by avoiding back-tracking (the layout of the equipment is diagrammed) and by installing automatic and semi-automatic devices. Rolls are stored on the trucks on which they are brought from the weave room. Photoelectric cells stop the combination stitchers and shearers when the roll runs out. Trucks and racks of the same height as the tables run on tracks between the shearing machines, the inspector frames, the folders, and the grading tables. Trucks taking folded cloth to the baling press are built to serve as the bottom of the press, so that the cloth need not be unloaded. The elevator for moving the baled and stenciled cloth to the warehouse operates automatically. The lift trucks and a device for baling burlap are described. Six photographs illustrate the equipment.

CONTAINER. Protective casing for textiles by the yard. William Polgar. USP 2 382 332, August 14, 1945. Yard goods are "protectively housed" in a device which includes an elongated horizontal casing with an opening along its bottom, a shaft for carrying a roll of fabric that fits into end bearings in the casing, a handle outside the casing connected to the shaft for rotating the shaft to wind and unwind the fabric, and opposed walls parallel to and connecting the casing along the edges of the opening. The shaft is so related to the opening in the casing that an unwound portion of the fabric depends through the opening. The opposed walls depend downward and house between them the fabric projecting from the opening. One of the walls has a portion that can be moved up to expose the depending portion of the fabric.

XIII, 5. Lighting

LIGHTING. Accidents and light. J. L. Kilpatrick. *Paper Industry 27,* 546 (July 1945). Abs. *Bull. Institute Paper Chem. (Library Notes) 15,* 479 (August 1945). "The author emphasizes the importance of good lighting, properly installed, for the prevention of accidents, and of maintaining it in that condition. Providing good lighting on the

basis of its initial installation is not enough. An installation which was quite satisfactory when installed may, in a comparatively few months, produce a lighting result which is only one-half or even one-third as much as the original . . . When changes in lighting are contemplated, competent illuminating engineers should be consulted to get the maximum in visibility, at the same time avoiding glare and shadows; hundreds of factories, large and small, have lighting systems wholly inadequate for safety."

XIII, 6. Atmospheric control

AIR CONDITIONING. Controlled atmosphere ups tire-cord production. William E. Vecsey, Aldora Mills. *Textile World 95,* No. 8, 123, 192 (August 1945). Installation of an evaporative cooling system in the Aldora Mills, Division of General Tire & Rubber Co., which makes cotton- and rayon-tire cord, increased: production 5%, the life of travelers, and the comfort of the workers. A relative humidity of 65% is maintained in the forming twister and the spinning rooms, 73% in the cotton cable-twister room, and 55% in the rayon beam-twister and the rayon cable-twister rooms. The highest air temperature is that in the forming twister room—80°F. dry bulb.

AAF IN INDUSTRY. AIR FILTRATION AND DUST CONTROL. Bulletin of the American Air Filter Co., Louisville, Ky., 1932; 34 pp.; gratis.

XIII, 8. Water supply

CORROSION INHIBITORS. Use of soluble inhibitors. Fundamental principles. U. R. Evans, Cambridge University. Symposium, 108th Meeting of the Am. Chem. Soc., New York. *Ind. Eng. Chem. 37,* 703-5, disc. 705-6 709 (August 1945). Inhibitors are useful to control corrosion leading to a soluble primary product that forms a sparingly soluble secondary product. Anodic inhibitors function by forming a sparingly soluble anodic product. They are dangerous if the reaction is under cathodic control and they are added in insufficient concentrations, because they localize and intensify the attack. Cathodic inhibitors are apt to be safe in all cases, because they do not intensify the attack, but they are less effective usually in reducing the total corrosion reaction. D. S. McKinney and J. C. Warner, Carnegie Institute of Technology questioned several statements in the paper.

CORROSION INHIBITORS. Corrosion control with threshold treatment. Factors in formation of protective films upon steel by waters treated with glassy phosphate. G. B. Hatch, Hall Laboratories, Inc., and Owen Rice, Calgon, Inc. *Ind. Eng. Chem. 37,* 752-9 (August 1945). "The rate of formation of protective films upon metal surfaces in threshold-treated waters is a function of the rate of supply of the glassy phosphate to these surfaces and is dependent upon the type and velocity of flow, as illustrated by the data from continuous flow tests. Two types of small-volume batch tests . . . were . . .

found to yield results amenable to the same interpretations as those from continuous flow tests. By means of these batch tests effects of intermittent motion, temperature, couples, and inhibitor reactions upon the inhibitive action of glassy phosphate were determined . . . in brines as well as tap water."

CORROSION INHIBITORS. Threshold treatment of water systems. Corrosion control and scale prevention with glassy phosphate. G. B. Hatch, Hall Laboratories, Inc., and Owen Rice, Calgon, Inc. Symposium, 108th Meeting of the Am. Chem. Soc., New York. *Ind. Eng. Chem. 37,* 710-15, disc. 715 (August 1945). Glassy phosphate inhibits the corrosion of metals by water and the deposition of calcium carbonate and iron oxide from the water. (Phosphate is added before the iron-bearing water is exposed to air.) Maximum control of scale is achieved by the maintenance of 2 p. p. m. glassy phosphate in the water. Water so treated forms protective films on the surfaces of the metals over which it passes. 38 References. J. A. Holmes, National Aluminate Corp., supplements the paper by giving a dosage chart for a typical phosphate (Nalco 918) to be used for determining initial dosages and changing dosages with varying conditions.

CORROSION INHIBITORS. Sodium nitrite as corrosion inhibitor for water. A. Wachter, Shell Development Co. *Ind. Eng. Chem. 37,* 749-51 (August 1945). Under many conditions sodium nitrite is a good corrosion inhibitor. It completely prevents the corrosion of steel by sodium chloride solutions and aqueous alcohol solutions. It is effective on steel covered with rust scale, and is either effective or not harmful on the common ferrous and nonferrous metals. The concentration of nitrite needed to produce pronounced results varies with the "severity of conditions", the pH, and the composition of the water.

CORROSION INHIBITORS. Zinc, manganese, and chromic salts as corrosion inhibitors. R. S. Thornhill, Cambridge University. Symposium, 108th Meeting of the Am. Chem. Soc., New York. *Ind. Eng. Chem. 37,* 706-8, disc. 709 (August 1945). The rate of corrosion of steel in tap water is reduced by adding small amounts of zinc, manganese, and chromic salts. At relatively high concentrations, however, zinc and chromic salts markedly intensify the corrosion occurring at the water line—manganese salts are free from this defect. In their discussion of this and Evans' paper (*Ibid.,* 703-5) W. H. J. Vernon and F. Wormwell, Department of Scientific & Industrial Research, Teddington, England, point out that both papers were dealing with corrosion in neutral solutions. They add further data to support the general conclusions of both authors.

CORROSION INHIBITORS. Protection of small water systems from corrosion. William Stericker, Philadelphia Quartz Co. Symposium, 108th Meeting of the Am. Chem. Soc., New York. *Ind. Eng. Chem. 37,* 716-20, disc. 720-21 (August

1945). Case histories of the control of corrosion in iron and brass water pipes in the water systems of office buildings, apartment houses, and laundries are cited in a discussion of silicates as corrosion inhibitors. In ordinary waters the minimum starting dosage is equivalent to 8 p. p. m. and the maintenance dosage is equivalent to 4-8 p. p. m. silica. The particular silicate to be chosen depends on the pH of the raw water. Henry L. Shuldener, Water Service Laboratories, cites additional cases.

CORROSION INHIBITORS. Scale and corrosion control in potable water supplies at Army Posts. R. T. Hanlon, A. J. Steffen, G. A. Rohlich, and L. H. Kessler, U. S. Army, Engineers Corps. Symposium, 108th Meeting of the Am. Chem. Soc., New York. *Ind. Eng. Chem. 37,* 724-35 (August 1945). A progress report on an extensive testing program undertaken at 30 Army Posts in various parts of the country presents results on five different sorts of treatment tried out for controlling the corrosion of brass, galvanized, and black iron piping. It was determined that threshold conditioning is cheap and effective, although in certain installations scale deposition in heaters at or near 180°F. makes annual cleaning necessary. Corrosion has been corrected by chemical conditioning. "Certain positive evidences of protective films, layers, or coatings have been observed."

CORROSION INHIBITORS. Galvanic corrosion of steel coupled to nickel. Effect of chromate and lime additions to water. H. R. Copson, The International Nickel Co. Symposium, 108th Meeting of the Am. Chem. Soc., New York. *Ind. Eng. Chem. 37,* 721-3 (August 1945). Galvanic corrosion tests were made on steel coupled to nickel in tap water at 30°C. With a three to one ratio of nickel to steel galvanic corrosion was appreciable, but not excessive. Addition of 300 p. p. m. sodium chromate practically inhibited corrosion, provided the steel was rubbed occasionally—undisturbed steel was liable to pit. Treating the water with lime to pH 11 cut down the total corrosion, but localized it so that the maximum rate of penetration was increased.

CORROSION INHIBITORS. Inhibitors of corrosion of aluminum. G. G. Eldredge and R. B. Mears, Aluminum Research Laboratories. Symposium, 108th Meeting of the Am. Chem. Soc., New York. *Ind. Eng. Chem. 37,* 736-41 (August 1945). "The use of inhibitors of the corrosion of aluminum is reviewed [52 references] and new data are presented. Inhibitors for aluminum behave differently in various acids. . . ."

CORROSION INHIBITORS. Inhibitors of corrosion of aluminum. March Darrin, Mutual Chemical Co. of America. Symposium, 108th Meeting of the Am. Chem. Soc., New York. *Ind. Eng. Chem. 37,* 741-9 (August 1945). "The technology, rather than the theory, of inhibiting . . . corrosion of bimetallic systems by means of chromate, under conditions encountered in practice" is described. "The effect of time of exposure, temperature, aeration, submergence of panels, initial pH, and chromate concentration are shown" by data collected from samples exposed for five years in recirculating and quiescent systems.

LIQUID PURIFIER. John K. Russel (to Luber-Finer, Inc.). USP *2* 381 141, August 7, 1945. A liquid purifier consists of a *cylindrical casing* open at one end, having at the other end a wall provided with relatively small inlet and outlet apertures, one of which is located in the center of the end wall; a *duct* seated in the central aperture; a *purifying cartridge* assembly having a central conduit in communication with the central aperture; *stops* on the inner surface of the casing formed by indentation of the casing, facing the open end, and placed so as to limit movement of the cartridge assembly toward the end wall; inwardly facing *guides* on the inner surface of the casing, formed by indentation of the casing, and converging upward toward the end wall, to guide the cartridge assembly into axial alignment with the casing as the assembly moves toward the closed end and into contact with the stops; and a readily *removable cover* secured to the open end of the casing. The cartridge assembly is of such dimensions that there is a relatively small space between it and the side wall of the casing.

SOFTENING WATER. Chemical processes and products. Aaron D. Johnson (to E. I. du Pont de Nemours & Co., Inc.). USP *2* 381 960, August 14, 1945. In a process for softening hard water an alkaline material is dissolved in the water and afterwards, but before the formation of a microscopic precipitate of "the hardness", tetrasodium pyrophosphate is dissolved in the water. The alkaline material is selected from the group consisting of trisodium phosphate, sodium hydroxide, sodium carbonates, potassium hydroxide, potassium carbonates, soap, and solid sodium silicate having a silicon dioxide: sodium oxide ratio greater than 1.5.

WATER SOFTENERS. Ion exchange products and their preparation. Ray Riley and Frederick C. Nachod (to The Permutit Co., Inc.). USP *2* 382 334, August 14, 1945. An organic cation exchange product is made by sulfonating a solid, organic, carbonizable material with a concentrated, liquid, sulfonating agent, washing and drying the sulfonated product, and further sulfonating the dried product with sulfur trioxide gas for a period great enough to increase substantially the cation-exchange capacity of the dried product.

XIV. TEXTILE RESEARCH

RESEARCH. Role of research—in war and peace. Based on "The Government's Wartime Research and Development, 1940-44", a report from the Subcommittee on Military Affairs, Part II, Findings and Recommendations. Harley M. Kilgore, U. S. Senate. *Chem. & Met. Eng. 52,* No. 8, 101-3 (August 1945). The main provisions of the Kil-

gore, Johnson, and Pepper bill, Sen. Bill 1297, are summarized in non-legal language. It proposes establishment of a central governmental agency to supervise public and private research on matters of national importance—defense, health and medical care, basic sciences, natural resources, peacetime uses for wartime research and manufacturing facilities, and projects for small businesses. The agency would allocate funds both to research laboratories and promising students, dispense data, and license patents. Graphs accompanying the introductory discussion of wartime federal research show the distribution of money by (a) sponsoring agencies and (b) the type of facilities used (government, industrial, private non-profit, and state and other laboratories), for the period 1938-44.

RESEARCH. Human aspects of scientific research. William A. Hamor, Mellon Institute. *Science 102,* 237-41 (September 7, 1945). The training of students, the management of scientists employed in research laboratories and institutions, and the making of productive contributions to society through research are discussed. These are termed the human aspects of research.

RESEARCH. Research in the Southwest. H. S. Busby. *Textile Colorist & Converter 67,* 918, 936 (August 1945). The last of four articles on the industrial possibilities of the Southwest stresses exceptional research and applications laboratories in that region. They include the U. S. Department of Agriculture's Regional Research Laboratory at New Orleans and its unit for studying fibers at College Station, Texas; the Business Research Bureau of the University of Texas at Austin; and laboratories not named specifically at Lubbock, Texas, Rushton, Louisiana, and Stillwater, Oklahoma.

RESEARCH FACILITIES. General Motors announces proposed technical center. Anon. *Mech. Eng. 67,* 623-4 (September 1945); *Rayon Textile Monthly 26,* 402 (August 1945). On July 24 Alfred P. Sloan, Jr., chairman of General Motors Corp., announced that his company will construct a group of buildings to be called the General Motors Technical Center on a 350-acre site just outside Detroit. Research, advanced engineering, styling, and processing sections of the staff will be housed in the new location. Short descriptions of the various buildings are given. They will cost more than $20,000,000.

SCHOLARSHIPS. British machine makers sponsor scholarships. Anon. *Textile Age 9,* No. 8, 12, 16 (August 1945). The "Sir Walter Preston Scholarships and Research Fellowships Scheme" has been started by Textile Machinery Makers, Ltd., England, to encourage education for apprentices and secondary school students interested in the textile industry. A fund of £35,000 is to be spent over a seven-year period.

TEXTILE RESEARCH DEPARTMENT OF THE AMERICAN VISCOSE CORPORATION, MARCUS HOOK, PA. Bulletin 302 of the American Viscose Corp., Wilmington, Del., April 1945; 28 pp.; gratis. Equipment available for experiments in the textile research department of the American Viscose Corp. is pictured in operation, and its arrangement is shown in diagrams. Cotton, wool, and worsted spinning systems; warping and weaving systems of different types; knitting machinery; and common types of dyeing and finishing equipment are shown.

WRITING. On engineering writing. Donald M. Crawford, J. G. White Engineering Corp. *Mech. Eng. 67,* 607-9 (September 1945). A brief manual of style.

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